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UNITED STATES PATENT AND TRADEMARK OFFICE

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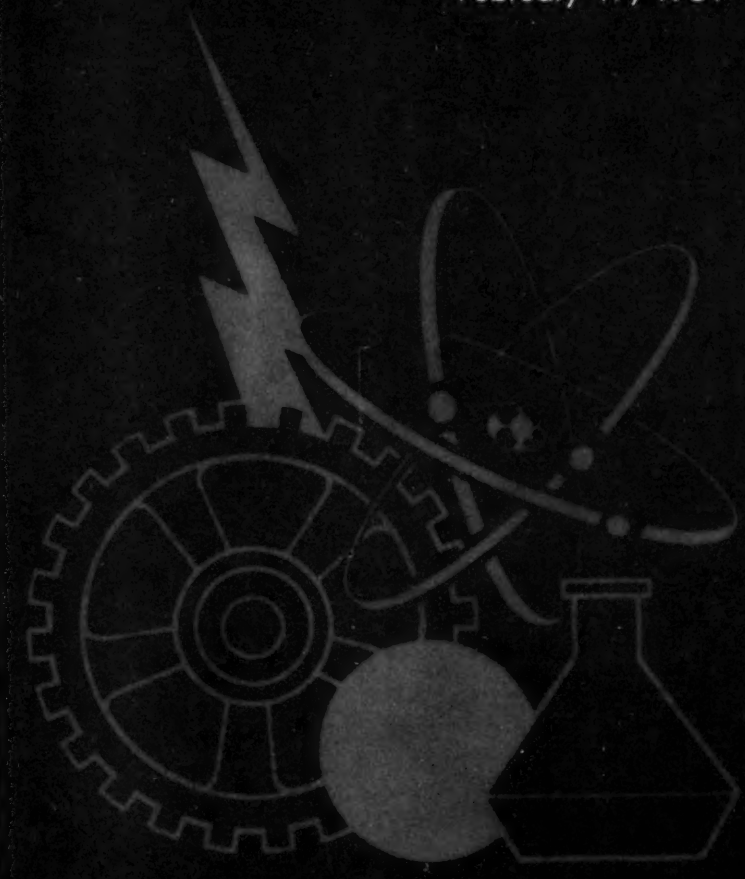
February 17, 1981



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

February 17, 1981 Volume 1003 Number 3

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the list of PCT member countries and the most recent PCT rule changes see the notice appearing at 1001 O.G. 14 in the OFFICIAL GAZETTE of Dec. 9, 1980.

Note that the international fees have been increased as of Jan. 1, 1981. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	$300.00
International fees:	
Basic fee (first 30 pages)	$265.00
Basic supplemental fee (for each sheet over 30)	$ 5.00
Designation fee	$ 64.00

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Jan. 13, 1981.

Reexamination and Inter Partes Protest Proceedings

37 CFR PART 1

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office proposes to amend the rules of practice in patent cases to provide procedures for the reexamination of patents and also to provide for inter partes protest proceedings between patent applicants and members of the public. The proposed rules provide regulations for the reexamination procedure provided for in Public Law 96–517. The inter partes protest procedure is proposed in view of a need for such a procedure having become apparent from experience under the revised reissue rules. The proposed changes are intended to improve the quality of United States patents.

DATES: Comments must be submitted on or before April 16, 1981; public hearing, April 16, 1981; 9:30 am; requests to present oral testimony should be received on or before April 9, 1981.

ADDRESSES: Address written comments and requests to present oral testimony to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza, located at 2021 Jefferson Davis Highway, Arlington, Virginia. Written comments and a transcript of the public hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Virginia.

FOR FURTHER INFORMATION CONTACT: Mr. R. Franklin Burnett by telephone at (703) 557–3054 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This proposed rule change relates to two, somewhat distinct, procedures for determining and improving the quality and reliability of United States patents. They are (1) a procedure for reexamination of patents are provided for in Public Law 96–517, section 1 of which relates to reexamination and becomes effective on July 1, 1981, and (2) a procedure providing for inter partes protest proceedings in a patent application between the patent applicant and a member (or members) of the public who has (have) access to the application file.

The two procedures permit a patent owner to choose between alternative routes for reconsideration of patented subject matter by the Patent and Trademark Office. If ex parte reconsideration on the basis of patents or printed publications is desired, in which any requestor may only reply to the patent owner's initial statement, then reexamination would be requested. If however, the patent owner desires an essentially inter partes procedure, with one or more protestors actively involved, the patent owner could file a reissue application in which all issues of patentability would be considered. The inter partes procedure would provide the patent owner's competitors or others with an opportunity to protest and seek participation via inter partes protest proceedings.

While a patent owner may choose either the reexamination or inter partes protest procedure, the only procedure open to a party other than the patent owner is to request reexamination. These alternative procedures should serve to significantly improve the quality and reliability of United States patents. Either alternative procedure would normally be less expensive than litigation in the Courts. Under the reexamination procedure, the patent owner, especially a small patent owner, could not be forced into the possibly more expensive inter partes protest proceedings in a reissue application in the Patent and Trademark Office.

Reexamination Procedure

The rules relating to reexamination proceedings are directed to the procedures set forth in Chapter 30 of Public Law 96–517, Title 35 of the United States Code (35 U.S.C. §§ 301–307). This Chapter provides for the citation of prior art in patents, filing of requests for reexamination, decisions on such requests, reexamination and appeal from reexamination decisions, and the issuance of a certificate at the termination of the reexamination proceedings.

Present rules 1.1, 1.5, 1.11, 1.21, 1.26, 1.33, 1.34, 1.36, 1.104, 1.107, 1.109, 1.111, 1.112, 1.113, 1.115, 1.116, 1.121, 1.191, 1.192, 1,231, 1.247, 1.248, 1.301, and 1.303 are proposed to be amended to provide for reexamination procedures. A new "Subpart D—Reexamination of Patents" is proposed which would include proposed new rules 1.501, 1.510, 1.515, 1.520, 1.525, 1.530, 1.535, 1.540, 1.550, 1.552, 1.555, 1.560, 1.565, and 1.570. Paragraph (b) of § 1.291, relating to prior art citations in patents, would be deleted, since provisions therefor would appear in proposed § 1.501.

Section 1.1, if amended as proposed, would provide for communications relating to reexamining proceedings to be marked "Box Reexam" to speed internal Office mail processing.

Section 1.5, if amended as proposed, would provide for all letters relating to reexamination proceedings to be identified by patent number and reexamination control number.

Section 1.11, if amended as proposed, would provide for all papers made of record in reexamination proceedings to be open to inspection and copying by the public.

Section 1.21, if amended as proposed, would provide a new paragraph (x) establishing a fee of $1,500.00 to be paid with any request for reexamination.

Section 1.26, if amended as proposed, would provide for a refund of $1,200.00, if the request for reexamination is refused.

Section 1.33, if amended as proposed, would have a new paragraph (c) relating to which address communications for the patent owner will be sent and who may sign papers filed.

Section 1.34, if amended as proposed, would provide for the appointment of an attorney or agent in a reexamination proceeding.

Section 1.36, if amended as proposed, would provide for the revocation and withdrawal of powers of attorney in a reexamination proceeding.

Section 1.104, if amended as proposed, broadens the present rule to also include reexamination.

Section 1.107, if amended as proposed, would provide for the citation of prior art by the examiner in a reexamination proceeding. The proposed rule would also refer to foreign published applications, as well as patents.

Section 1.109, if amended as proposed, would provide for the examiner to supply reasons for allowance in a reexamination proceeding if the examiner believes that the record does not make clear the reasons for allowing a claim or claims.

Section 1.111, if amended as proposed, would provide for replies by the patent owner in a reexamination proceeding.

Section 1.112, if amended as proposed, would provide for reexamination and reconsideration of the patent under reexamination after response by the patent owner.

Section 1.113, if amended as proposed, would provide for a final rejection or action in a reexamination proceeding.

Section 1.115, if amended as proposed, would provide for amendments by the patent owner in a reexamination proceeding.

Section 1.116, if amended as proposed, would provide for amendments after final action in a reexamination proceeding.

Section 1.121, if amended as proposed, would contain a new paragraph (f) which would require a complete copy of any new or amended claim when presented during reexamination proceedings.

Section 1.191, if amended as proposed, would provide for appeal to the Board of Appeals by the patent owner from any decision adverse to patentability, in accordance with 35 U.S.C. 306.

Section 1.192, if amended as proposed, would provide one month from the date of the Notice of Appeal for the patent owner to file an appeal brief in a reexamination proceeding.

Section 1.231(a)(1) if amended as proposed, would provide for a motion that a patent claim is unpatentable in an interference proceeding where reexamination thereof has also been requested.

Paragraph (b) of Section 1.247, if amended as proposed, would not contain any reference to proof of service since proof of service is included in the proposed amendments to § 1.248.

Section 1.248, if amended as proposed, would include a new paragraph (b) relating to methods of serving papers and proof of service.

Section 1.301, if amended as proposed, would provide for appeal by the owner of a patent in reexamination proceedings to the U.S. Court of Customs and Patent Appeals.

Section 1.303, if amended as proposed, would provide for remedy by civil action under 35 U.S.C. 145 for the owner of a patent in reexamination proceedings.

Proposed § 1.501 would provide a system for citation of information to the Patent and Trademark Office, for placement in the patent file by any person during the term of the patent in accordance with 35 U.S.C. 301.

Proposed § 1.510 would set forth procedures for any person to request reexamination in accordance with 35 U.S.C. 302.

Proposed paragraph (a) of § 1.510 would limit the period for such request to the period of enforceability of the patent for which the request is filed and require payment of the reexamination fee.

Proposed paragraph (b) of § 1.510 would require that each request for reexamination include the following:

(1) A statement pointing out what is considered to be a substantial new question of patentability.

(2) An explanation of the pertinency and manner of applying prior patents or printed publications to every patent claim for which reexamination is requested.

(3) A Copy of every patent or printed publication referred to and an English translation of any necessary and pertinent portions thereof.

(4) A Copy of the entire specification (including claims) and drawings of the patent for which reexamination is requested in the form of cut-up copies of the original printed patent.

(5) A certification that a copy of the request, if not filed by the patent owner, has been served on the patent owner.

Proposed paragraph (c) of § 1.510 would indicate under which conditions a request for reexamination would be considered.

Proposed paragraph (d) of § 1.510 would indicate which date would be considered to be the date of the request for reexamination.

Proposed paragraph (e) of § 1.510 would cover amendments which a patent owner could propose. Such amendments could accompany a request for reexamination by the patent owner.

Proposed § 1.515 would relate to the determination as to whether the request has presented a substantial new question of patentability under 35 U.S.C. 303.

Proposed paragraph (a) of § 1.515 would require that the determination be made within 3 months of the filing date of the request.

Proposed paragraph (c) of § 1.515 would provide for review by petition to the Commissioner of any decision refusing reexamination.

Proposed § 1.520 would provide for reexamination at the initiative of the Commissioner under the provisions of the last sentence of paragraph (a) of 35 U.S.C. 303.

Proposed § 1.525 would provide for ordering reexamination where a substantial new question of patentability has been found pursuant to §§ 1.515 or 1.520.

Proposed § 1.525 also would provide for publication of the notice of the order for reexamination in the Official Gazette if the order is returned to the Office undelivered. The proposed rules do not provide for publication of all orders for reexamination in the Official Gazette in view of the increased costs that would involve. However, the Office could undertake this service at some future date at additional expense if desired.

Proposed § 1.530 would relate to the statement and proposed amendments provided for in the second sentence of 35 U.S.C. 304. Amendments submitted by the patent owner cannot enlarge the scope of a claim in the patent. Amendments will not be effectively entered into the patent until the certificates under § 1.570 and 35 U.S.C. 307 is issued.

Proposed § 1.535 would provide for reply by the reexamination requestor to the statement under § 1.530 of the patent owner and for service on the patent owner of any such reply.

Proposed § 1.540 would relate to the consideration of statements under § 1.530 and replies under § 1.535.

Proposed § 1.550 would cover the basic items relating to the conduct of reexamination proceedings. These proceedings will basically follow the procedures used for examining patent applications. The patent owner will be required to serve the reexamination requestor with any response to the Office, in order to remove the necessity of the requestor having to continuously monitor the file wrapper.

Proposed § 1.552 would cover the scope of reexamination in a reexamination proceeding. The Office intends that the reexamination in a reexamination proceeding be of a high quality. While it is not intended that the examiners will routinely completely research patents when conducting reexamination the examiners will be free to, and will, conduct additional searches and cite and apply additional prior patents and publications when it is appropriate and beneficial to do so. Insofar as the actual examination is concerned, the examination as to original patent claims would be on the basis of patents or printed publications. However, narrowed amended or new claims limited to the original disclosure would be examined for compliance with other sections of the statute (35 U.S.C. §§ 112 and 132) which are necessary in order to ensure that any amended or new claims are supported, valid, and do not introduce new matter.

Proposed § 1.552 would also provide that questions relating to matters other than those identified in paragraphs(a) and (b) of the section would merely be noted by the examiner as being an open question in the record. Patent owners could then file a reissue application if they wish such questions to be resolved.

Proposed § 1.555 would cover the duty of disclosure by a patent owner in a reexamination proceeding involving the owner's patent.

Proposed § 1.560 would relate to the conduct of interviews in reexamination proceedings.

Proposed § 1.565 would provide for the Commissioner to determine which, if any, proceedings should be stayed or suspended, if concurrent proceedings involving the patent under reexamination are instituted.

Proposed § 1.570 would concern the issuance of the reexamination certificate under 35 U.S.C. 307 after conclusion of reexamination proceedings. The certificate would cancel any patent claims determined to be unpatentable, confirm any patent claims determined to be patentable, and incorporate into the patent any amended or new claim determined to be patentable.

Inter Partes Protest Proceedings

The rules relating to the proposed inter partes protest proceedings are set forth in the proposed amendments to § 1.1(d) and (e), § 1.8(a)(xii), § 1.21(y), (z) and (aa), § 1.26 (d) § 1.56(e), and § 1.291. Proposed new §§ 1.360–1.380 are directed to the details of the inter partes proceedings. Section 1.292, directed to Public use proceedings, is proposed to be deleted since such proceedings may be conducted under the proposed inter partes protest procedure.

Section 1.1 if amended as proposed, would provide for communications relating to inter partes protest proceedings and reissue applications to be specially marked to speed internal Office processing.

Section 1.8, if amended as proposed, would contain a new paragraph (a)(xii) which would normally exclude the filing of papers in inter partes protest proceedings from the Certificate of Mailing Practice.

Proposed new paragraphs (y) and (z) to § 1.21 would provide the same fees for filing a notice of appeal (review), and for filing an appeal (review) brief by the protestor in an inter partes protest proceeding as currently required for patent applicants filing an appeal. Proposed paragraph (aa) would set the fee which is required to accompany a petition to have an inter partes protest proceeding declared a contested case.

If the petition to have an inter partes protest proceeding declared a contested case is not granted, section 1.26(d), if amended as proposed, would provide a refund of $400.

Proposed new paragraph (e) to § 1.56 would provide for a member of the public to file a petition to strike an application from the files in the Office pursuant to § 1.56(d).

Section 1.292 is proposed to be deleted since questions concerning public use or sale could be processed under the proposed inter partes protest procedure.

Proposed § 1.360 would provide for any member of the public filing a petition to have protest proceedings declared inter partes.

Proposed § 1.361 would provide for addition of parties to inter partes protest proceedings.

Proposed § 1.362 would provide for serving every paper filed in an inter partes protest proceeding on all the other parties involved in the proceeding.

Proposed § 1.363 would provide the various time periods for filing papers during inter partes protest proceedings.

Proposed § 1.364 would provide that all interviews in inter partes protest proceedings relating to matters of substance would normally be held only if applicant's representative is in attendance.

Proposed § 1.365 would provide for the Office to require parties to answer specific questions, to supply evidence, to supply information or documents material to the examination, or to explain evidence already of record.

Proposed § 1.366 would permit any party to file a petition to have an inter partes protest proceeding declared a contested case so that testimony may be taken. Any such petition must include the fee proposed in paragraph (aa) of § 1.21 and the items set forth in paragraphs (a)(2)–(8) of § 1.366. Other parties to the inter partes protest proceeding will be given 21 days to join or oppose the petition. After expiration of this time period, the Office will render its decision. In deciding to grant or deny a petition to have an inter partes protest proceeding declared a contested case the Office presently plans to take into consideration the burdens which would be placed upon the parties and the necessity for, or benefits from, a contested case proceeding. If it appears that the burden on one or more of the parties clearly outweighs any benefits which are likely to be obtained or there are alternatives (such as an examiner requirement for information) for obtaining necessary information or evidence to resolve issues, the petition would be denied.

Proposed § 1.367 would provide for the assignment of times for the taking of testimony if a petition under § 1.366 is granted.

Proposed § 1.368 would refer to §§ 1.271–1.286 for the procedure for taking testimony.

Proposed § 1.369 would provide for the filing of the certified transcript of the testimony, executed copies of affidavits, stipulated testimony or facts, and exhibits.

Proposed § 1.370 would provide for the filing of briefs after the close of the period for testimony.

Proposed § 1.371 would provide for requesting an oral hearing or interview following submission of briefs relating to the testimony.

Proposed § 1.372 would provide for the issuance of a notice indicating the final disposition of the claims and setting of the time for filing an appeal.

Proposed § 1.373 would provide for an appeal to the Board of Appeals by any party from the decision of the examiner in an inter partes protest proceeding.

Proposed § 1.374 would provide details of an appeal by the applicant to the Board of Appeals.

Proposed § 1.375 would provide details of an appeal by a party other than the applicant to the Board of Appeals.

Proposed § 1.376 would provide that the examiner will not ordinarily participate in any appeal since the issues would normally be fully covered in the briefs of the parties.

Proposed § 1.377 would provide for an oral hearing before the Board of Appeals upon request of any party.

Proposed § 1.378 would provide for the decision of the Board of Appeals.

Proposed § 1.379 would provide that any action following the Board of Appeals decision be in accordance with § 1.197.

Proposed § 1.380 would provide that any reopening after the Board of Appeals decision be in accordance with § 1.198.

Classification: Under the regulations of the Department of Commerce the proposed regulations are deemed to be significant for the purposes of Executive Order 12044.

Regulatory Analysis: The Patent and Trademark Office has determined that this rulemaking has no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

Environmental Impact Statement: This regulation does not significantly affect the environment. An environmental impact statement is not required under the National Environmental Policy Act of 1969.

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Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. §§ 6 and 41, the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations as set forth below.

In the text of the proposed amendments, additions are indicated by arrows and deletions are indicated by brackets.

It is proposed to amend 37 CFR, Chapter I, as follows:

1. Section 1.1 is proposed to be revised to read as follows:

§ 1.1 *All communications to be addressed to Commissioner of Patents and Trademarks*

►(a)◄ All letters and other communications intended for the Patent and Trademark Office must be addressed to "Commissioner of Patents and Trademarks," Washington, D.C. 20231. When appropriate, a letter should also be marked for the attention of a particular officer or individual.

►(b)◄ Letters and other communications relating to international applications during the international stage and prior to the assignment of a national serial number should be additionally marked "Box PCT."

►(c) Letters and other communications relating to reexamination proceedings and requests for such reexamination should be marked "Box Reexam."

(d) Letters and other communications relating to inter partes protest proceedings should be marked "Box Protest."

(e) Letters and other communications filed after receipt of the serial number of a reissue application and relating thereto should be marked "Box Reissue."◄

2. Section 1.5 is proposed to be amended by adding a new paragraph (d) to read as follows:

§ 1.5 *Identification of application, patent or registration*

* * * * *

►(d) A letter relating to a reexamination proceeding should identify it as such by patent number undergoing reexamination and the reexamination control number assigned to such proceeding.◄

3. Section 1.8 is proposed to be amended by adding a new paragraph (a)(xii) to read as follows:

§ 1.8 *Certificate of mailing*

(a) * * *

►(xii) The filing of papers in inter partes protest proceedings involving patent applications, unless the Commissioner specifically authorizes its use in the proceeding.◄

* * * * *

4. Section 1.11 is proposed to be amended by adding a new paragraph (c) to read as follows:

§ 1.11 *Files open to the public*

* * * * *

►(c) All papers or copies thereof relating to a reexamination proceeding which have been entered of record in the patent or reexamination file are open to inspection by the general public, and copies may be furnished upon paying the fee therefor.◄

5. Section 1.21 is proposed to be amended by adding new paragraph (x), (y), (z), and (aa):

§ 1.21 *Patents and miscellaneous fees and charges*

* * * * *

►(x) Reexamination—$1,500.00.

(y) For filing request for review under § 1.373 by inter partes protestor—$50.00.

(z) For filing brief in support of reviews by inter partes protestor—$50.00.

(aa) For filing petition to have an inter partes protest proceeding declared a contested case—$500.00.◄

6. Section 1.26 is proposed to be revised to read as follows:

§ 1.26 *Refunds*

►(a)◄ Money paid by actual mistake or in excess, such as a payment not required by law, will be refunded, but a mere change of purpose after the payment of money, as when a party desires to withdraw his application or to withdraw an appeal, will not entitle a party to demand such a return. ►Amounts of fifty cents or less will not be returned unless specifically demanded within a reasonable time, nor will the

payer be notified of such amount; amounts over fifty cents but less than one dollar may be returned in postage stamps, and other amounts by check or, if requested, by credit to a deposit account.◄

►(b)◄ Refund of a portion of any international search fee paid to the Patent and Trademark Office may be made where the prior art search made during the subsequent examination of a national application is wholly or partly based on the earlier international search made in the international application for which the search fee was paid. The amount of the refund will be as determined by the examiner according to the value of the prior international search made by the Patent and Trademark Office as an International Searching Authority, as 90 percent, 45 percent, or 0 percent of the international search fee. If the amount of the refund is not a multiple of $5, it will be rounded to the next higher multiple of $5. (Note § 1.446 for refund of the search fee in an international application.) [Amounts of ten cents or less will not be returned unless specifically demanded within a reasonable time, nor will the payer be notified of such amount; amounts over ten cents but less than $1 may be returned in postage stamps, and other amounts by check.]

►(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,200.00 will be made to the requestor of the proceeding. Reexamination requestors should indicate whether any refund should be made by check or by credit to a deposit account.

(d) If the Commissioner refuses to declare an inter partes protest proceeding a contested case pursuant to a petition filed under § 1.366, or refuses to permit the petitioner to join in a contested case, a refund of $400.00 will be made to the petitioner whose petition is denied. Petitioners should indicate whether any refund should be made by check or by credit to a deposit account.◄

7. Section 1.33 is proposed to be amended by revising the title and adding a new paragraph (c) to read as follows:

§ 1.33 *Correspondence respecting patent applications►, reexamination proceedings,◄ and ►other◄ proceedings*

* * * * *

►(c) All notices, official letters, and other communications for the patent owner or owners in a reexamination proceeding will be directed to the attorney or agent of record in the patent file (see § 1.34(b)), or, if no attorney or agent is of record, to the patent owner or owners at the address or addresses of record in the patent file. Amendments and other papers filed in a reexamination proceeding on behalf of the patent owner must be signed by the patent owner, or if there is more than one owner by all the owners, or by an attorney or agent of record in the patent file, or by a registered attorney or agent not of record who acts in a representative capacity under the provisions of § 1.34(a). Double correspondence with the patent owner or owners and the patent owner's attorney or agent, or with more than one attorney or agent, will not be undertaken. If more than one attorney or agent is of record and a correspondence address has not been specified, correspondence will be held with the last attorney or agent made of record.◄

8. Section 1.34 is proposed to be revised to read as follows:

§ 1.34 *Recognition for representation*

(a) When a registered attorney or agent acting in a representative capacity appears in person or signs a paper in practice before the Patent and Trademark Office in a patent case, his ►or her◄ personal appearance or signature shall constitute a representation to the Patent and Trademark Office that under the provisions of this part and the law, he ►or she◄ is authorized to represent the particular party in whose behalf he ►or she◄ acts. In filing such a paper, the attorney or agent should specify his ►or her◄ registration number with his ►or her◄ signature. Further proof of authority to act in a representative capacity may be required.

(b) When an attorney or agent shall have filed his ►or her◄ power of attorney, or authorization, duly executed by the person or persons entitled to prosecute ►an◄ [the] application ►or a patent involved in a reexamination proceeding, ◄ he ►or she◄ is a principal attorney of record in the case. A principal attorney or agent so appointed, may appoint an associate attorney or agent who shall also then be of record.

9. Section 1.36 is proposed to be revised to read as follows:

§ 1.36 *Revocation of power of attorney or authorization; withdrawal of attorney or agent*

A power of attorney or authorization of agent may be revoked at any stage in the proceedings of a case, and an attorney or agent may withdraw, upon application to and approval by the Commissioner. An attorney or agent, except an associate attorney or agent whose address is the same as that of the principal attorney or agent, will be notified of the revocation of his ►or her◄ power of attorney or authorization, and the applicant ►or patent owner◄ will be notified of the withdrawal of the attorney or agent. An assignment will not of itself operate as a revocation of a power or authorization previously given, but the assignee of the entire interest may revoke previous powers and be represented by an attorney or agent of his own selection.

10. Section 1.56 is proposed to be amended by adding a new paragraph (e) to read as follows:

§ 1.56 *Duty of disclosure; striking of applications*

* * * * *

►(e) Any member of the public may seek to have an application stricken from the files pursuant to paragraph (d) of this section by filing a petition to strike the application from the files. Any such petition specifically identifying the application to which the petition is directed will be entered in the application file and, if timely submitted, will be considered. Any such petition and any accompanying papers must either (1) be served upon applicant in accordance with § 1.248; or (2) be filed with the Office in duplicate in the event service is not possible. Any such petition filed by an attorney or agent must be in compliance with § 1.346.◄

11. In 1.104 paragraphs (a) and (b) are proposed to be revised to read as follows:

§ 1.104 *Nature of examination; examiner's action*

(a) On taking up an application for examination ►or a patent in a reexamination proceeding◄, the examiner shall make a thorough study thereof and shall make a thorough investigation of the available prior art relating to the subject matter of the ►claimed◄ invention [sought to be patented]. The examination shall be complete with respect both to compliance of the application ►or patent under reexamination,◄ with the ►applicable◄ statutes and rules and to the patentability of the invention as claimed, as well as with respect to matters of form, unless otherwise indicated.

(b) The applicant ►, or in the case of a reexamination proceeding, both the patent owner and the requestor,◄ will be notified of the examiner's action. The reasons for any adverse action or any objection or requirement will be stated and such information or references will be given as may be useful in aiding the applicant ►, or in the case of a reexamination proceeding, the patent owner◄ to judge [of] the propriety of continuing the prosecution [of his application].

* * * * *

12. Section 1.107 is proposed to be revised to read as follows:

§ 1.107 *Citation of references*

►(a)◄ If domestic patents [be] ►are◄ cited ►by the examiner◄ their numbers and dates, ►and◄ the names of the patentees, and the classes of inventions must be stated. If foreign ►published applications or◄ patents ►are◄ [be] cited, their nationality or country, numbers and dates, and the names of the patentees must be stated, and such other data must be furnished as may be necessary to enable the applicant ►, or in the case of a reexamination proceeding the patent owner,◄ to identify the ►published applications or◄ patents cited. In citing foreign ►published applications or◄ patents, in case only ►a◄ part of the ►document is◄ [patent be] involved, the particular pages and sheets containing the parts relied upon must be identified. If printed publications ►are◄ [be] cited, the author (if any), title, date, pages or plates, and place of publication, or place where a copy can be found, shall be given.

►(b)◄ When a rejection ►in an application◄ is based on facts within the personal knowledge of an employee of the Office, the data shall be as specific as possible, and the reference must be supported, when called for by the applicant, by the affidavit of such employee, and such affidavit shall be subject to contradiction or explanation by the affidavits of the applicant and other persons.

13. Section 1.109 is proposed to be revised to read as follows:

§ 1.109 *Reasons for allowance*

If the examiner believes that the record of the prosecution as a whole does not make clear his ►or her◄ reasons for allowing a claim or claims, the examiner may set forth such reasoning. This shall be incorporated into an Office action rejecting other claims of the application ►or patent under reexamination◄ or be the subject of a separate communication to the applicant ►or patent owner◄. The applicant ►or patent owner◄ may file a statement commenting on the reasons for allowance within such time as may be specified by the examiner. Failure to file such a statement shall not give rise to any implication that the application ►or patent owner◄ agrees with or acquiesces in the reasoning of the examiner.

14. Section 1.111 is proposed to be revised to read as follows:

§ 1.111 *Reply by applicant ►or patent owner◄*

(a) After the office action, if adverse in any respect, the applicant ►or patent owner◄, if he ►or she◄ persist ►s◄ in his ►or her◄ application for a patent ►or reexamination proceeding◄, must reply thereto and may request reexamination or reconsideration, with or without amendment.

(b) In order to be entitled to reexamination or reconsideration, the applicant ►or patent owner◄ must make request therefor in writing, and [he] must distinctly and specifically point out the supposed errors in the examiner's action; the applicant ►or patent owner◄ must respond to every ground of objection and rejection in the prior office action (except that request may be made that objections or requirements as to form not necessary to further consideration of the claims be held in abeyance until allowable subject matter is indicated), and the applicant's ►or patent owner's◄ action must appear throughout to be a bona fide attempt to advance the case to final action. A general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references does not comply with the requirements of this section.

(c) In amending [an application] in response to a rejection ►in an application or reexamination proceeding◄, the applicant ►or patent owner◄ must clearly point out the patentable novelty which he ►or she◄ thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He ►or she◄ must also show how the amendments avoid such references or objections. (See §§ 1.135 and 1.136 for time for reply.)

15. Section 1.112 is proposed to be revised to read as follows:

§ 1.112 *Re-examination and reconsideration*

After response by applicant ►or patent owner◄ (§ 1.111) the application ►or patent under re-examination◄ will be re-examined and reconsidered, and the applicant ►or patent owner◄ will be notified if claims are rejected, or objections or requirements made, in the same manner as after the first examination. Applicant ►or patent owner◄ may respond to such Office action, in the same manner provided in § 1.111, with or without amendment, but any amendments after the second Office action must ordinarily be restricted to the rejection or to the objections or requirements made, and the application will be again considered, and so on repeatedly, unless the examiner has indicated that the action is final.

16. Section 1.113 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.113 *Final rejection or action*

(a) On the second or any subsequent examination or consideration the rejection or other action may be made final, whereupon applicant's ►or patent owner's◄ response is limited to appeal in the case of rejection of any claim (§ 1.191), or to amendment as specified in § 1.116. Petition may be taken to the Commissioner in the case of objections or requirements not involved in the rejection of any claim (§ 1.181). Response to a final rejection or action must include cancellation of, or appeal from the rejection of, each claim so rejected and, if any claim stands allowed, compliance with any requirement or objection as to form.

* * * * *

17. Section 1.115 is proposed to be revised to read as follows:

§ 1.115 *Amendment (by applicant)*

The applicant may amend before or after the first examination and action and also after the second or subsequent examination or reconsideration as specified in § 1.112 or when and as specifically required by the examiner. ►The patent owner may amend in accordance with §§ 1.510(e) and 1.530(b), and after examination in accordance with §§ 1.112 and 1.116.◄

18. Section 1.116 is proposed to be amended by revising paragraphs (a) and (b) to read as follows:

§ 1.116 *Amendments after final action*

(a) After final rejection or action (§ 1.113) amendments may be made cancelling claims or complying with any requirement of form which has been made, and amendments presenting rejected claims in better form for consideration on appeal may be admitted; but the admission of any such amendment or its refusal, and any proceedings relative thereto, shall not operate to relieve the application ►or patent under reexamination◄ from its condition as subject to appeal or to save [it] ►the application◄ from abandonment under § 1.135.

(b) If amendments touching the merits of the application ►or patent under reexamination are◄ [be] presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon a showing of good and sufficient reasons why they are necessary and were not earlier presented.

* * * * *

19. Section 1.121 is proposed to be amended by adding a new paragraph (f) to read as follows:

§ 1.121 *Manner of making amendments*

►(f) Proposed amendments presented in patents involved in reexamination proceedings must be presented in the form of a full copy of the text of each claim to be amended. Matter deleted from the patent claim shall be placed between brackets and matter added shall be underlined. Copies of the printed claims from the patent may be used with any additions being indicated by insert lines.◄

20. Section 1.191 is proposed to be revised to read as follows:

§ 1.191 *Appeal to Board of Appeals*

(a) Every applicant for a patent or for reissue of a patent, ►or every owner of a patent under reexamination,◄ any of the claims of which have been twice rejected, or who has been given a final rejection (§ 1.113), may, upon the payment of the fee required by law, appeal from the decision of the [primary] examiner to the Board of Appeals within the time allowed for response.

(b) The appeal ►in an application◄ must identify the rejected claim or claims appealed, and must be signed by the applicant or [his] duly authorized attorney or agent. [(See § 3.41)] ►An appeal in a reexamination proceeding must identify the rejected claim or claims appealed, and must be signed by the patent owner or duly authorized attorney or agent.◄

(c) Except as otherwise provided by § 1.026, ►an◄ appeal when taken must be taken from the rejection of all claims under rejection which ►the◄ applicant ►or patent owner◄ proposes to contest. Questions relating to matters not affecting the merits of the invention may be required to be settled before an appeal can be considered.

21. Section 1.192 is proposed to be amended by revising paragraph (a) to read as follows:

§ 1.192 *Appellant's brief*

(a) The appellant shall, within 2 months from the date of the ►notice of◄ appeal ►under § 1.191 in an application or reissue application or within 1 month from the date of the notice of appeal under § 1.191 in a reexamination proceeding◄ or within the time allowed for response to the action appealed from, if such time is later, filed a brief in triplicate, accompanied by the requisite fee, of the authorities and arguments on which [he] ►the appellant◄ will rely to maintain [his] ►the◄ appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if [he desires] an oral hearing ►is desired◄. Upon a showing of sufficient cause, the Com-

missioner may grant extensions of time for filing the brief. The determination of such requests may be delegated by the Commissioner to appropriate Patent and Trademark Office officials. All requests for extensions must be filed prior to the expiration of the period sought to be extended. ►The filing of a request for extension of time does not stay any period unless and until granted.◄

* * * * *

22. Section 1.231 is proposed to be amended by revising paragraph (a) (1) to read as follows:

§ 1.231 *Motions before the primary examiner*

(a) Within the period set in the notice of interference for filing motions any party to an interference may file a motion seeking:

(1) To dissolve as to one or more counts, except that such motion based on facts sought to be established by affidavits, declarations or evidence outside of official records and printed publications will not normally be considered [, and when one of the parties to the interference is a patentee, no motion to dissolve on the ground that the subject matter of the count is unpatentable to all parties or is unpatentable to the patentee will be considered, except that a motion to dissolve as to the patentee may be brought which is limited to such matters as may be considered at final hearing (§ 1.258)]. ►When one of the parties is a patentee, a motion to dissolve will not be considered if it would necessarily result in the conclusion that the claims of the patent which correspond to the counts are unpatentable to the patentee on a ground which is not ancillary to priority, except that a motion to dissolve on the ground that such claims are unpatentable over patents or printed publications will be considered through reexamination if it complies with the requirements of § 1.510(b) and is accompanied by the reexamination fee set in § 1.21(x).

Where a motion to dissolve is based on prior art, service on opposing parties must include copies of such prior art. A motion to dissolve on the ground that there is no interference in fact will not be considered unless the interference involves a design or plant patent or application or unless it relates to a count which differs from the corresponding claim of an involved patent or of one or more of the involved applications as provided in §§ 1.203(a) and 1.205(a).

* * * * *

23. Section 1.247 is proposed to be amended by revising paragraph (b) to read as follows:

§ 1.247 *Service of papers*

(b) The specification in certain sections that a designated paper must be served does not imply that other papers, not excepted above need not be served. However, the requirement for service of designated papers may be waived under particular circumstances and service may be required of other designated papers which need not ordinarily be served. [Proof of service must be made before the paper will be considered in the interference by the Office. A statement of the attorney, attached to or appearing in the original paper when filed clearly stating the time and manner in which service was made will be accepted as prima facie proof of service.]

24. Section 1.248 is proposed to be revised to read as follows:

§ 1.248 *Service of papers; manner of service ►; proof of service◄*

►(a◄ Service of papers must be on the attorney or agent of the party if there be such or on the party if there is no attorney or agent, and may be made in ►any◄ [either] of the following ways:

►(1)◄[(a)] By delivering a copy of the paper to the person served;

►(2)◄ [(b)] By leaving a copy at the usual place of business of the person served with someone in this employment;

►(3)◄ [(c)] When the person served has no usual place of business, by leaving a copy at his residence, with a member of his family over 14 years of age and of discretion;

►(4)◄ [(d)] Transmission by first class mail which may also be certified or registered. When service is by mail the date of mailing will be regarded as the date of service.

►(5)◄ Whenever it shall be satisfactorily shown to the Commissioner that none of the above modes of obtaining or serving the paper is practicable, service may be by notice published in the Official Gazette.

►(b) Papers filed in the Patent and Trademark Office which are required to be served shall contain proof of service. Proof of service may appear on or be affixed to papers filed. Proof of service shall include the date and manner of service. In the case of personal service, proof of service shall also include the name of any person served, certified by the person who made service. Proof of service may be made by (1) an acknowledgement of service by or on behalf of the person served or (2) a statement signed by the attorney or agent containing the information required by this section.◄

25. Section 1.291 is proposed to be amended by revising the title, removing paragraph (b) and revising paragraph (c) to read as follows:

§ 1.291 *Protests [and prior art citations] by public*

* * * * *

[(b) Citations of prior art and any papers related thereto may be entered in the patent file after a patent has been granted, at the request of a member of the public or the patentee. Such citations and papers will be entered without comment by the Patent and Trademark Office.]

►(b)◄ [(c)] Protests [and prior art citations] by the public and any accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant ►in accordance with § 1.248◄ [or patentee or upon his attorney or agent of record]; or (2) be filed with the Office in duplicate in the event service is not possible.

26. Section 1.292 is proposed to be removed.

[§ 1.292 *Public use proceedings*

(a) When a petition for the institution of public use proceedings, supported by affidavits or declarations is filed by one having information of the pendency of an application and is found, on reference to the primary examiner, to make a prima facie showing that the invention involved in an interference or claimed in an application believed to be on file had been in public use or on sale one year before the filing of the application, or before the date alleged by an interfering party in his preliminary statement or the date of invention established by such party, a hearing may be had before the Commissioner to determine whether a public use proceeding should be instituted. If instituted, times may be set for taking testimony, which shall be taken as provided by §§ 1.271 to 1.286. The petitioner will be heard in the proceedings but after decision therein will not be heard further in the prosecution of the application for patent.

(b) The petition and accompanying papers should either (1) reflect that a copy of the same has been served upon the applicant or upon his attorney or agent of record; or (2) be filed with the Office in duplicate in the event service is not possible. The petition and accompanying papers, or a notice that such a petition has been filed, shall be entered in the application file.]

27. Section 1.301 is proposed to be revised to read as follows:

§ 1.301 *Appeal to U.S. Court of Customs and Patent Appeals*

Any applicant ►or owner of a patent involved in a reexamination proceeding◄ dissatisfied with the decision of the Board of Appeals, and any party to an interference dissatisfied with the decision of the Board of Patent Interferences, may appeal to the U.S. Court of Customs and Patent Appeals. The appellant must take the following steps in such an appeal: (a) In the Patent and Trademark Office give notice to the Commissioner and file the reasons of appeal (see §§ 1.302 and 1.304); (b) in the court, file a petition of appeal and a certified transcript of the record within a specified time after filing the reasons of appeal, and pay the fee for appeal, as provided by the rules of the court. The transcript will be transmitted to the Court by the Patent and Trademark Office on order of and at the expense of the appellant. Such order should be filed with the notice of appeal, but in no case should it be filed later than 15 days thereafter.

28. Section 1.303 is proposed to be revised to read as follows:

§ 1.303 *Civil action under 35 U.S.C. 145, 146*

(a) Any applicant ►or owner of a patent involved in a reexamination proceeding◄ dissatisfied with the decision of the Board of Appeals, and any party dissatisfied with the decision of the Board of Patent Interferences, may, instead of appealing to the U.S. Court of Customs and Patent Appeals (§ 1.301), have remedy by civil action under 35 U.S.C. 145

►or◄ [and] 146 ►as appropriate◄ [respectively]. Such civil action must be commenced within the time specified in § 1.304.

(b) If an applicant in an ex parte case ►or an owner of a patent involved in a reexamination proceeding◄ has taken an appeal to the U.S. Court of Customs and Patent Appeals, he ►or she◄ thereby waives his ►or her◄ right to proceed under 35 U.S.C. 145.

(c) If a defeated party to an interference proceeding has taken an appeal to the U.S. Court of Customs and Patent Appeals, and any adverse party to the interference shall, within twenty days after the appellant shall have filed notice of the appeal to the court (§ 1.302), file notice with the Commissioner that he ►or she◄ elects to have all further proceedings conducted as provided in 35 U.S.C. 146, certified copies of such notices will be transmitted to the U.S. Court of Customs and Patent Appeals for such action as may be necessary. The notice of election must be served as provided in § 1.248.

29. A new section 1.360 is proposed to be added which reads as follows:

►§ 1.360 *Petition for inter partes protest proceedings*

A petition to have protest proceedings declared inter partes may be filed by (a) an applicant against whose application a petition has been filed under § 1.56(e) or a protest has been filed under § 1.291(a); or (b) any member of the public having or obtaining access to an application who submits a petition under § 1.56(e) or a protest in accordance with the second sentence of § 1.291(a). Normally a properly filed petition based on information material to the examination of the application as defined in § 1.56(a) will be granted and further proceedings will be conducted in accordance with §§ 1.361–1.380.◄

30. A new section 1.361 is proposed to be added which reads as follows:

►§ 1.361 *Addition of parties to inter partes proceedings*

Any member of the public having or obtaining access to an application in which protest proceedings have been declared inter partes may file a timely petition to join in such proceedings. Such petition to join must be accompanied by a petition under § 1.56(e), or a protest in accordance with the second sentence of § 1.291(a), if not filed previously.◄

31. A new section 1.362 is proposed to be added which reads as follows:

►§ 1.362 *Service of papers in inter partes protest proceedings*

(a) Every paper filed in an inter partes protest proceeding must be served upon the other parties in the manner provided in § 1.248. Proof of service must be made before the paper will be considered in the proceeding by the Office. A signed certificate of service attached to or appearing in the original paper when filed, clearly stating the time and manner in which service was made, will be accepted as prima facie proof of service.

(b) Correspondence from the Office will be mailed to all parties to the proceeding. The papers will be mailed to the attorney or agent of the party if there be such or to the party if there is no attorney or agent.◄

32. A new section 1.363 is propose to be added which reads as follows:

►§ 1.363 *Time for filing papers in inter partes protest proceedings*

(a) Unless notified otherwise by the Office, any response by applicant to a petition under § 1.56(e) or a protest under § 1.291(a) is due one month from the date of service.

(b) Unless notified otherwise by the Office, any comments or response to an Office communication by a protestor must be filed within the period set for any response by applicant.

(c) Unless notified otherwise by the Office, protestor will be permitted to comment on any response to an Office communication by applicant within twenty-one calendar days from the date of service of the response.

(d) Unless notified otherwise by the Office, applicant will be permitted to file a rebuttal to protestor's comments under paragraph (c) of this section within twenty-one calendar days from the date of service of protestor's comments.

(e) Except where prohibited by statute, the times set forth in this section may be extended by stipulation of the parties, subject to approval by the Office, or on request of a party showing sufficient cause for such extension. Any request for extension must reflect the results of an attempt to obtain a stipulation of the parties and must be filed on or before the day on which the paper is due.

(f) Unless otherwise directed by the Office, § 1.8 does not apply to papers filed in inter partes protest proceedings and the Office may require such papers to be filed in the appropriate location in the Office.

(g) Papers filed late or other than as expressly authorized above will normally be refused consideration except upon a showing, under oath or in the form of a declaration (§ 1.68), of sufficient cause as to why such paper was late or why it should be considered even though not expressly authorized. The parties should endeavor to make their first submission with regard to a specific issue as complete as possible in order to avoid the necessity to file multiple papers since papers subsequent to the first submission on an issue on behalf of a party may be refused consideration. The strict requirements on the filing of papers are intended to permit the rapid disposition of these proceedings and the Office intends to act upon applications in these proceedings normally within one month of the date of their availability for action.◄

33. A new section 1.364 is proposed to be added which reads as follows:

►§ 1.364 *Interviews in inter partes protest proceedings*

After a protest proceeding has been declared inter partes all parties will have an equal opportunity to request an inter partes interview pursuant to § 1.133, but no such interview relating to matters of substance will be held without representation on behalf of applicant except in special circumstances as the Commissioner or the Commissioner's designee may direct. All interviews will be conducted in accordance with such guidelines as the Office may establish.◄

34. A new section 1.365 is proposed to be added which reads as follows:

►§ 1.365 *Requirements for information*

(a) Any party to the inter partes protest proceedings may be required by the Office to answer specific questions, supply evidence, or information or documents material to the examination as defined in § 1.56(a), or to explain or supplement evidence already of record. If the applicant fails to respond fully and in a timely fashion, the application may be regarded as abandoned. If any party other than the applicant fails to respond fully or in a timely fashion, that party's further participation in the proceeding may be terminated or the matter in question may be decided adversely to such party.

(b) Any requirement for information must, to the extent possible, be answered by the person having direct knowledge of the facts. If the person having direct knowledge of the facts cannot respond, the person answering the requirement must provide the information requested and explains why the person having direct knowledge is not responding.

(c) Any answers or materials supplied by an attorney or agent authorized to practice before the Patent and Trademark Office in patent cases may be over the attorney or agent's signature as provided for in § 1.346. Any answers or materials supplied by persons other than an attorney or agent authorized to practice before the Patent and Trademark Office in patent cases must be in the form of an affidavit or a declaration.◄

35. A new section 1.366 is proposed to be added which reads as follows:

►§ 1.366 *Petition to have inter partes protest proceeding declared a contested case for the purpose of taking testimony*

(a) Any party may petition to have the inter partes protest proceedings declared a contested case for the purposes of taking testimony. Any such petition much include:

(1) A fee as specified in § 1.21(aa).

(2) A specific identification of the issue(s) upon which the party seeks to take testimony.

(3) A showing that the information cannot be obtained or authenticated by the parties or the Office except through testimony and that the information sought by petitioner is, or is likely to be, material to the examination of the application as defined in § 1.56(a).

(4) A description of the nature and content of the expected testimony to the extent that such is then known to petitioner.

(5) An explanation of the relevance of the expected testimony to the issue(s) under consideration.

(6) The names and addresses of all persons whom petitioner intends to call as witnesses indicating the relationship of each person to the issue(s).

(7) An identification and listing of each document in the possession, custody, or control of petitioner upon which petitioner intends to rely together with an offer to serve on all other parties a copy of each such document.

(8) An identification and listing of each thing in petitioner's possession, custody, or control upon which petitioner intends to rely together with a proffer of reasonable access to such things.

(b) Unless notified otherwise by the Office, each party other than the petitioner under paragraph (a) of this section will have twenty-one calendar days from the date of service of the petition within which to join or oppose the petition. Any request to join the petition must likewise comply with paragraph (a) of this section and must particularly point out any additions to, or differences from, the initial petition. Any opposition to the petition must set forth the specific and complete reasons advanced in opposition thereto. If any request to join the petition is filed by a party other than applicant and contains additions to, or differences from, the initial petition, applicant will be permitted an additional twenty-one calendar days from the date of service of the request within which to join or oppose the petition. No other papers relating to the petition will be considered prior to decision thereon except as provided in § 1.363(g), unless expressly required by the Office.

(c) After expiration of the time periods set forth in paragraph (b) of this section the Office will render its decision on the petition. Oral hearings will not be held except when considered necessary by the Office. If an oral hearing on the petition is held it will be conducted in accordance with such guidelines as the Office may establish. Any party may request reconsideration within twenty-one calendar days of the mailing date of the decision on the petition. The parties will not be heard further on this matter, and no appeal will lie from the decision on reconsideration.

(d) Any petitions to have an inter partes protest proceeding declared a contested case filed subsequent to an Office decision denying a first such petition in an application will be dismissed as untimely except upon a showing, under oath or declaration, of sufficient causes as to why such petition is necessary and was not earlier presented.◄

36. A new § 1.367 is proposed to be added which reads as follows:

►§ 1.367 *Assignment of times for taking of testimony.*

If the petition under § 1.366 is granted, the decision on petition will ordinarily require and set a period for service of any document referred to in § 1.366(a), and will also set a period for access to things upon which a petitioner intends to rely. The decision will likewise set times for taking testimony and for filing and serving the copies required by § 1.369. The order in which the parties take testimony will ordinarily be set in the decision on petition. Where applicant is not a petitioner, petitioners in opposition to the grant of the patent will ordinarily complete their testimony in chief and applicant may then take rebuttal testimony. If applicant is a petitioner, applicant will ordinarily complete testimony in chief after which petitioners in opposition to the grant of the patent will take their testimony with applicant being permitted to take rebuttal testimony thereafter.◄

37. A new § 1.368 is proposed to be added which reads as follows:

►§ 1.368 *Manner of taking testimony*

Testimony shall be taken as provided in §§ 1.271 to 1.286.◄

38. A new §1.369 is proposed to be added which reads as follows:

►§ 1.369 *Copies of the testimony*

(a) The certified transcript of the testimony (§§ 1.275 to 1.278) or executed copies of affidavits or stipulated testimony or facts (§ 1.272), and the exhibits, must be filed in the Office. One true copy must be served upon each of the other parties. If an inter partes oral hearing or interview is granted in accordance with § 1.371, or if any party appeals pursuant to § 1.373, two additional copies, without the exhibits, may be required by the Office.

(b) The copies of the testimony required in paragraph (a) of this section may be submitted either in printed form in accordance with § 1.253(e) or in typewritten form in accordance with § 1.253(f).

(c) The copies, whether printed or typewritten, must include the testimony presented by the party filing the same, an index of the names of the witnesses, giving the pages where their examination and cross-examination begin, and an index of the exhibits, briefly describing their nature and giving the pages at which they are identified and offered in evidence. The pages must be serially numbered throughout the entire record of testimony and the names of the witnesses must appear at the top of the pages over their testimony.

(d) The copies of the testimony for each party must be filed and served on all other parties by the date specified in the decision on petition pursuant to § 1.367 or such extensions thereof as may be granted.

(e) The testimony filed in the Office by each party must reflect service on all other parties and the testimony of any party failing to properly serve another party may be refused consideration by the Office.◄

39. A new section 1.370 is proposed to be added which reads as follows:

►§ 1.370 *Briefs relating to the testimony*

Unless otherwise directed by the Office, a party in opposition to the grant of the patent may file a brief relating to the testimony within one month of the date on which the copies of the last testimony must be filed and served under § 1.369(d). Applicant's brief is due within two months of the date on which the copies of the last testimony must be filed and served under § 1.369(d), unless otherwise directed by the Office. No further reply briefs will be considered.►

40. A new § 1.371 is proposed to be added which reads as follows:

►§ 1.371 *Inter partes oral hearing or interview following submission of briefs relating to the testimony*

The brief, or a paper accompanying the brief, of any party may request an oral hearing or interview. If such an oral hearing or interview is granted all the parties will be offered an opportunity to be present and participate. No oral hearing or interview shall be granted as a matter of right.◄

41. A new § 1.372 is proposed to be added which reads as follows:

►§ 1.372 *Final decision by the examiner*

The examiner will conclude consideration of an inter partes protest proceeding by the issuance of a notice to the parties indicating the final disposition of the claims and setting forth the time for filing an appeal by any of the parties.◄

42. A new § 1.373 is proposed to be added which reads as follows:

►§ 1.373 *Appeal from the decision of the examiner in an inter partes protest proceeding*

Any party to an inter partes protest proceeding may appeal to the Board of Appeals from the examiner's final disposition of the claims within the time set by the examiner for such appeal. A party other than the applicant may appeal by the filing of a request for review by the Board of Appeals within the time set by the examiner.

Any appeal by the applicant must be accompanied by the fee required by law and a request for review must be accompanied by the fee required by § 1.21(y).◄

43. A new § 1.374 is proposed to be added which reads as follows:

►§ 1.374 *Appeal by applicant*

(a) If an appeal is filed by applicant, applicant shall, within two months from the date of the appeal, file a brief in triplicate, accompanied by the requisite fee, of the authorities and arguments on which applicant will rely to maintain the appeal, including a concise explanation of the invention which should refer to the drawing by reference characters, and a copy of the claims involved, at the same time indicating if applicant desires an oral hearing.

(b) Where applicant has filed an appeal and a brief, any party who wishes to participate in the appeal must file, within one month from the date of service of applicant's brief, a response to applicant's brief. If the party has filed a timely notice of a request for review by the Board of Appeals, the response to applicant's brief should also cover all matters for which review was requested and must be accompanied by the fee required by § 1.21(z). The response by any party

must be filed in triplicate and must indicate if an oral hearing is desired.◄

44. A new § 1.375 is proposed to be added which reads as follows:

►§ 1.375 *Request for review*

(a) If an appeal has been filed by a party other than the applicant and no appeal has been filed by the applicant, the brief in support of review, accompanied by the fee required by § 1.21(z), must be filed in triplicate within two months from the date of the appeal and must indicate if an oral hearing is desired.

(b) Any brief filed in support of review must include a copy of the claims upon which review is sought and must include the authorities and arguments on which the party will rely. If applicant has not filed a brief, the brief in support of review must also include a concise explanation of the invention, which should refer to the drawing by reference characters.

(c) Within one month from the latest date of service of briefs in support of review, applicant may file a rebuttal in triplicate.◄

45. A new § 1.376 is proposed to be added which reads as follows:

►§ 1.376 *Examiner's participation in the appeal*

(a) The examiner will not ordinarily participate in the appeal since the issues will normally be adequately treated by the brief and responses of the parties. However, if the issues are determined not to be adequately treated by the brief and responses of the parties, the examiner may furnish, or be requested by the Board of Appeals to furnish, a written statement relating to the same.

(b) Any written statement furnished by the examiner may be responded to by any participating party within one month of the mailing date of the statement.◄

46. A new § 1.377 is proposed to be added which reads as follows:

►§ 1.377 *Oral hearing before Board of Appeals*

The Board of Appeals will hold an oral hearing upon request of any party. The order in which the parties will be heard and the time for oral argument will be set by the Board prior to the hearing date. Any participating party other than the applicant who does not make a timely request to be heard may be present, but may not be heard unless permitted by the Board.◄

47. A new § 1.378 is proposed to be added which reads as follows:

►§ 1.378 *Decision by the Board of Appeals in inter partes protest proceeding*

The decision by the Board of Appeals will treat each of the issues properly raised by the parties and will render a decision thereon. The decision of the Board will be made in accordance with § 1.196, except that its decision will extend to all issues properly raised by the parties.◄

48. A new § 1.379 is proposed to be added which reads as follows:

►§ 1.379 *Action following decision by the Board of Appeals*

Action following the decision of the Board of Appeals will be in accordance with § 1.197.◄

49. A new § 1.380 is proposed to be added which reads as follows:

►§ 1.380 *Reopening after decision by the Board of Appeals*

Reopening after decision by the Board of Appeals will be in accordance with § 1.198.◄

50. A new § 1.501 is proposed to be added which reads as follows:

►§ 1.501 *Citation of information in patents*

(a) At any time during the period of enforceability of a patent, any person may cite in writing to the Patent and Trademark Office information, including patents or printed publications, which that person states to be pertinent and applicable to the patent and believes to have a bearing on the patentability of any claim of a particular patent. All such citations will be entered in the patent file. If the person making the citation wishes his or her identity to be excluded from the patent file and kept confidential, the citation papers must be submitted without any identification of the person making the submission.

(b) Citation of information by the public in patents should either (1) reflect that a copy of the same has been mailed to the patent owner as provided in § 1.33(c); or (2) be filed with the Office in duplicate in the event service is not possible.◄

51. A new § 1.510 is proposed to be added which reads as follows:

►§ 1.510 *Request for reexamination*

(a) Any person may, at any time during the period of enforceability of a patent, file a request for reexamination by the Patent and Trademark Office of any claim of the patent on the basis of prior art patents or printed publications cited under § 1.501. The request must be accompanied by the reexamination fee set in § 1.21(x).

(b) Any request for reexamination must include the following parts:

(1) A statement pointing out each substantial new question of patentability based on prior patents and printed publications.

(2) An identification of every claim for which reexamination is requested, and a detailed explanation of the pertinency and manner of applying the cited prior art to every claim for which reexamination is requested. If appropriate the party requesting reexamination may also point out how claims distinguish over cited prior art.

(3) A copy of every patent or printed publication relied upon or referred to in paragraphs (1) or (2) of this subsection accompanied by an English language translation of all the necessary and pertinent parts of any non-English language patent or printed publication.

(4) The entire specification (including claims) and drawings of the patent for which reexamination is requested must be furnished in the form of cut-up copies of the original patent with only a single column of the printed patent securely mounted on one side of a separate paper. A copy of any disclaimer, certificate of correction, or reexamination certificate issued in the patent must also be included.

(5) A certification that a copy of the request filed by a person other than the patent owner has been served in its entirety on the patent owner at the address provided in § 1.33(c). The name and address of the party served must be indicated. If service was not possible, a duplicate copy must be supplied to the Office.

(c) If the request does not include the reexamination fee or all of the parts required by paragraph (b) of this section, the person identified as requesting reexamination will be so notified and given an opportunity to complete the request within a specified time. If the reexamination fee has been paid but the defect in the request is not corrected within the specified time, the determination whether to institute reexamination will be made on the request as it then exists. If the reexamination has not been paid, no determination will be made and the request will be placed in the patent file.

(d) The filing date of the request is: (1) the date on which the complete request including the reexamination fee and all of the parts required by paragraph (b) of this section is received in the Patent and Trademark Office; or (2) the date on which the last part completing or correcting such request is received; or (3) the date on which the response under paragraph (c) of this section is due.

(e) If the request is filed by the patent owner, a proposed amendment may be included, in accordance with § 1.121(f). Claims must not be renumbered and the numbering of the claims added for reexamination must follow the number of the highest numbered patent claim. No amendment may enlarge the scope of the claims of the patent. No new matter may be introduced into the patent.◄

52. A new § 1.515 is proposed to be added which reads as follows:

►§ 1.515 *Determination of the request for reexamination*

(a) Within three months following the filing date of a request for reexamination, a reexamination examiner will consider the request and determine whether a substantial new question of patentability affecting any claim of the patent is raised by the request and the prior art cited therein, with or without consideration of other patents or printed publications. The reexamination examiner's determination will become a part of the official file of the patent and will be given or mailed to the patent owner at the address provided in § 1.33(c) and to the person requesting reexamination.

(b) Where no substantial new question of patentability has been found, a refund of a portion of the reexamination fee will be made to the requestor in accordance with section 1.26(c).

(c) The requestor may seek review by a petition to the Commissioner under § 1.181(a)(3) within one month of the mailing date of the reexamination examiner's determination refusing reexamination. Any such petition must comply with § 1.181(b). If no petition is timely filed or if the decision on petition is that no substantial new question of patentability has been raised, the determination shall be final and non-appealable.◄

53. A new § 1.520 is proposed to be added which reads as follows:

►§ 1.520 *Reexamination at the initiative of the Commissioner*

The Commissioner, at any time during the period of enforceability of a patent, may determine, or may designate other appropriate Patent and Trademark Office officials to determine, whether a substantial new question of patentability is raised by patents or printed publications which have been brought to the Commissioner's attention even though no request for reexamination has been filed in accordance with § 1.510. The Commissioner may initiate reexamination without a request for reexamination pursuant to § 1.510 or delegate such authority to appropriate Patent and Trademark Office officials. Normally requests from outside the Patent and Trademark Office that the Commissioner undertake reexamination on his own initiative will not be considered. Any determination to initiate reexamination under this section will become a part of the official file of the patent and will be given or mailed to the patent owner at the address provided in § 1.33(c).◄

54. A new § 1.525 is proposed to be added which reads as follows:

►§ 1.525 *Order to reexamine*

(a) If a substantial new question of patentability is found pursuant to §§ 1.515 or 1.520, the determination will include an order for reexamination of the patent for resolution of the question. If the order for reexamination resulted from a petition pursuant to § 1.515(c), the reexamination will ordinarily be conducted by a reexamination examiner other than the reexamination examiner responsible for the initial determination under § 1.515(a).

(b) If the order for reexamination of the patent mailed to the patent owner at the address provided in § 1.33(c) is returned to the Office undelivered, notice of the order for reexamination shall be published in the Official Gazette.◄

55. A new § 1.530 is proposed to be added which reads as follows:

►§ 1.530 *Statement and amendment by patent owner*

(a) No statement or other response by the patent owner shall be filed prior to the determinations made in accordance with §§ 1.515 or 1.520. If a premature statement or other response is filed by the patent owner it will not be acknowledged or considered in making the determination.

(b) The order for reexamination will set a period not less than two months from the date of the order within which the patent owner may file a statement on the new question of patentability including any proposed amendments the patent owner wishes to make. If publication of the order for reexamination in the Official Gazette is required pursuant to § 1.525 (b) a period of not less than two months from the date of publication will be set within which the patent owner's statement may be filed.

(c) Any statement filed by the patent owner shall clearly point out why the subject matter as claimed is not anticipated or rendered obvious by the prior art patents or publications, either alone or in any reasonable combinations. Any statement filed must be served upon the reexamination requestor in accordance with § 1.248.

(d) The proposed amendments must be made in accordance with § 1.121(f). No amendment may enlarge the scope of the claims of the patent or introduce new matter. No amended or new claims may be proposed for entry in an expired patent. Moreover, no amended or new claims will be incorporated into the patent by certificate issued after the expiration of the patent.

(e) Although the Office actions will treat proposed amendments as though they have been entered, the proposed amendments will not be effective until the reexamination certificate is issued.◄

56. A new § 1.535 is proposed to be added which reads as follows:

►§ 1.535 *Reply by requestor*

A reply to the patent owner's statement under § 1.530 may be filed by the reexamination requestor within two months from the date of service of the patent owner's statement. Any reply by the requestor must be served upon the patent owner in accordance with § 1.248.◄

57. A new § 1.540 is proposed to be added which reads as follows:

►§ 1.540 *Consideration of responses*

The failure to timely file or serve the documents set forth in § 1.530 or in § 1.535 may result in their being refused consideration. No submissions other than the statement pursuant to § 1.530 and the reply by the requestor pursuant to § 1.535 will be considered prior to examination. If the patent owner does not file a statement under § 1.530, no reply or other submission from the reexamination requestor will be considered.◄

58. A new § 1.550 is proposed to be added which reads as follows:

►§ 1.550 *Conduct of reexamination proceedings*

(a) After issuance of the reexamination order and the time for submitting any responses thereto, the examination will be conducted in accordance with §§ 1.104–1.119 and will result in the issuance of a reexamination certificate under § 1.570.

(b) The patent owner will be given a period of not less than 30 days to respond to any Office action. Such response may include further statements in response to any rejections and/or proposed amendments or new claims to place the patent in a condition where all the claims, if amended as proposed, would be patentable.

(c) The time for reply set in paragraph (b) of this section will be extended only for sufficient cause, and for a reasonable time specified. Any request for such extension must be filed on or before the day on which action by the applicant is due, but in no case will the mere filing of the request effect any extension.

(d) If the patent owner fails to file a timely and appropriate response to any Office action, the reexamination proceeding will be terminated and the Commissioner will proceed to issue a certificate under § 1.570.

(e) The reexamination requestor will be sent copies of Office actions issued during the reexamination proceeding. Any document filed by the patent owner must be served on the requestor in the manner provided in § 1.248. The document must reflect service or the document may be refused consideration by the Office. The active participation of the reexamination requestor ends with the reply pursuant to § 1.535, and no further submissions on behalf of the reexamination requestor will be acknowledged or considered. Further, no submissions on behalf of any third parties will be acknowledged or considered unless such submissions are in accordance with § 1.510. Accordingly, such additional submissions should not be filed.◄

59. A new § 1.552 is proposed to be added which reads as follows:

►§ 1.552 *Scope of reexamination in a reexamination proceeding*

(a) Original patent claims will be reexamined on the basis of patents or printed publications.

(b) Amended or new claims presented during a reexamination proceeding must not enlarge the scope of the claims of the patent and will be examined on the basis of patents or printed publications and also for compliance with the requirements of 35 U.S.C. 112 and the new matter prohibitions of 35 U.S.C. 132.

(c) Questions other than those indicated in paragraphs (a) and (b) of this section will not be resolved in a reexamination proceeding. If such questions are raised or discovered during a reexamination proceeding, the existence of such questions will be noted by the examiner in which case the patent owner may desire to consider the advisability of filing a reissue application to have such questions considered and resolved.◄

60. A new § 1.555 is proposed to be added which reads as follows:

►§ 1.555 *Duty of disclosure in reexamination proceedings*

If the owner of a patent involved in a reexamination proceeding is aware, or becomes aware, of patents or printed publications material to the reexamination which have not been previously made of record in the patent file, the patent owner must bring such patents or printed publications to the attention of the Office by filing a prior art statement as provided in § 1.98 within two months of the date of the order for reexamination, or as soon thereafter as possible.◄

61. A new § 1.560 is proposed to be added which reads as follows:

►§ 1.560 *Interviews in reexamination proceedings*

(a) Interviews in reexamination proceedings pending before the Office between examiners and the owners of such patents or their attorneys or agents of record must be had in the Office at such times, within office hours, as the respective examiners may designate. Interviews will not be permitted at any other time or place without the authority of the Commissioner. Interviews for the discussion of the patentability of claims in patents involved in reexamination proceedings will not be had prior to the first official action thereon. Interviews should be arranged for in advance. Requests that reexamination requestors participate in interviews with examiners will not be granted.

(b) In every instance of an interview with an examiner, a complete written statement of the reasons presented at the interview as warranting favorable action must be filed by the patent owner. An interview does not remove the necessity for response to Office actions as specified in § 1.111.◄

62. A new § 1.565 is proposed to be added which reads as follows:

►§ 1.565 *Concurrent Office proceedings*

(a) In any reexamination proceeding before the Office, the patent owner shall call the attention of the Office to any prior or concurrent proceedings in which the patent is or was involved such as interferences, reissue, reexaminations, or litigation and the results of such proceedings.

(b) If a patent in the process of reexamination becomes involved in interference proceedings or a reissue application is filed for the patent, or litigation is instituted, the Commissioner shall determine whether or not to stay the reexamination, reissue, or interference proceeding. If reexamination is stayed for the conduct of a reissue proceeding, the reissue proceeding shall take into account prior art provided by the requestor for reexamination and the reexamination requestor will be granted at least the same degree of participation in the reissue proceeding which the requestor would have had in the reexamination proceeding. Any reexamination proceeding stayed for the conduct of a reissue proceeding shall be terminated by the grant of the reissued patent.◄

63. A new § 1.570 is proposed to be added which reads as follows:

►§ 1.570 *Issuance of reexamination certificate after reexamination proceedings*

(a) Upon the conclusion of reexamination proceedings, the Commissioner will issue a certificate under 35 U.S.C. 307 indicating the results of the reexamination proceeding and the content of the patent following the reexamination proceeding.

(b) A certificate will be issued in each patent in which a reexamination proceeding has been ordered under § 1.525. Any statutory disclaimer filed by the patent owner will be made part of the certificate.

(c) The certificate will be mailed on the day of its date to the patent owner as provided in § 1.33(c). A copy of the certicate will also be mailed to the requestor of the reexamination proceeding.

(d) If a certificate has been issued which cancels all of the claims of the patent, no further Office proceedings will be conducted with regard to that patent or any reissue applications or reexamination requests relating thereto.

(e) If the reexamination proceeding is terminated by the grant of a reissued patent as provided in § 1.565(b), the reissued patent will constitute the reexamination certificate required by this section and 35 U.S.C. 307.

(f) A notice of the issuance of each certificate under this section will be published in the OFFICIAL GAZETTE on its date of issuance.◄

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dec. 29, 1980.

Approved: Dec. 31, 1980.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 81-1013 Filed 1-12-81: 8:45 am]

Correction of Inventorship

37 CFR Part 1

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Proposed rulemaking.

SUMMARY: The proposed rules specify that certain inventorship errors can be corrected in patents and patent applications which are not correctable under the existing rules. For example, the named inventor could be changed from a sole individual who is not the inventor to a sole individual who is the inventor. The change is being proposed in view of the court decision in *Stoddard v. Dann*, 564 F.2d 556, 195 USPQ 97 (D.C. Cir. 1977) which held a sole-to-sole inventorship change to be appropriate in certain instances. The proposed rule change will clarify what corrections may be made by applicants and patentees.

DATES: Written comments by Mar. 6, 1981. Hearing: Mar. 6, 1981, beginning at 9:30 a.m.

ADDRESSES: Address written comments to the Commissioner of Patents and Trademarks, Washington, D.C. 20231. The hearing will be held in Room 11C24 of Building 3, Crystal Plaza located at 2021 Jefferson Davis Highway, Arlington, Va. Written comments and transcript of hearing will be available for public inspection in Room 11E10 of Building 3, Crystal Plaza at 2021 Jefferson Davis Highway, Arlington, Va.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070 or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office is considering amendments to the Rules of Practice in Patent Cases which authorize the correction of inventorship. The proposal would permit changes from an applicant who is not the inventor to another applicant who is the actual inventor in a situation where there is no deceptive intention. The situation is similar to that presented in *Stoddard v. Dann*, 564 F.2d 556, 195 USPQ 97, a decision rendered by the U.S. Court of Appeals for the District of Columbia Circuit in 1977. Situations which involve deceptive intention, such as that in *Bemis v. Chevron Research Co.*, 599 F.2d 910, 203 USPQ 123 (9th Cir. 1979) where the Court prohibited a conversion from a sole applicant to another sole applicant who was the actual inventor, are not covered by the proposed amendment. The proposed changes adding §§ 1.48 and 1.426 would broadly provide for the correction of inventorship from an original applicant or applicants, who was or were not the actual inventor or inventors to another applicant or applicants who is or are the actual inventor or inventors.

The proposal would permit the substitution of one inventor for another inventor as contemplated by *Stoddard v. Dann*. Only joint inventorship errors involving addition or deletion of less than all applicants, were correctable prior to the *Stoddard v. Dann*, decision. To date, two petitions requesting sole-to-sole conversion of inventorship have been granted by the Patent and Trademark Office based on *Stoddard v. Dann*. Others have been denied where the fact situations were not appropriate.

Codifying the Court's decision in *Stoddard v. Dann* in the patent rules seems highly desirable and will result in very little additional expense to the Patent and Trademark Office or applicants. It is expected that only a few requests for conversion will have to be processed each year by the Patent and Trademark Office.

The proposed rule change takes full advantage of the holding in *Stoddard v. Dann*. The decision is construed to cover not just fact situations identical to that in *Stoddard v. Dann* (e.g., covering only a foreign inventor who cannot

understand English and does not know United States patent practice) The rationale of *Stoddard v. Dann*, is considered to apply to all innocent inventorship errors. Therefore, if the statute can be read to permit sole-to-sole conversion in a specific fact situation, it can also be read to permit correction of other innocent errors of inventorship.

Notice is hereby given that, pursuant to the authority contained in Section 6 of the Act of July 19, 1952, as amended (66 Stat. 793, 85 Stat. 364, 88 Stat. 1949; 35 U.S.C. 6 as amended) the Patent and Trademark Office proposes to amend Title 37 of the Code of Federal Regulations by amending §§ 1.45 and 1.324 and by adding new §§ 1.48 and 1.426.

This proposal has been reviewed pursuant to E.O. 12044 and determined to have no potential major economic consequences requiring the preparation of a regulatory analysis.

In the text of the proposed amendments to § 1.324, additions are indicated by arrows and deletions are indicated by brackets.

It is proposed to amend 37 CFR Chapter I, as follows:

§ 1.45 [*Amended*]

1. By amending § 1.45 by removing the heading "(a)" to the first paragraph and by removing entirely paragraphs "(b)" and "(c)."

2. By adding § 1.48 to read as follows:

§ 1.48 *Correction of inventorship*

If an application for patent has been made through error without any deceptive intention by one person as sole inventor when the person was not in fact the inventor, or was actually a joint inventor, the application may be corrected by amendment to remove the name of the person not the inventor and add the name of the actual sole inventor, or to include all the joint inventors. Such amendment must be accompanied by a statement of the facts verified by the original applicant and an oath or declaration as required by § 1.65 by the applicant who is the actual inventor, or each applicant who is a joint inventor. Such amendment must be diligently made and have the written consent of any assignee. In like manner, if an application for patent has been made through error without any deceptive intention by two or more persons as joint inventors, when they were not in fact joint inventors, or all the actual joint inventors, the application may be corrected by amendment to remove the names of those not inventors and add the names of the actual joint inventors, or to include all the joint inventors. Such amendment must be accompanied by a statement of the facts verified by the original applicants and an oath or declarations as required by § 1.65 by each applicant who is a joint inventor. Such amendment must be diligently made and have the written consent of any assignee.

3. By revising § 1.324 to read as follows:

§ 1.324 *Correction of error in joining inventor*

Whenever a patent is issued and it appears that there was [a misjoinder or nonjoinder of inventors] ►an error in the designation of inventorship◄ and that such [misjoinder or omission] ►error◄ occurred [by error and] without deceptive intention, the Commissioner may, on application of all the parties and the assignees and satisfactory proof of the facts, or on order of a court before which such matter is called in question, issue a certificate [deleting the misjoined inventor from the patent or adding the non-joined inventor to] ►correcting inventorship in◄ the patent.

4. By adding § 1.426 to read as follows:

§ 1.426 *Correction of inventorship*

If an international application for patent designating the United States of America has been made through error without any deceptive intention by one person as sole inventor when the person was not in fact the inventor, or was actually a joint inventor, the international application may be corrected by amendment before the United States Patent and Trademark Office to remove the name of the person not the inventor and add the name of the actual sole inventor, or to include all the joint inventors. Such amendment must be accompanied by a statement of the facts verified by the original application and an oath or declaration as required by § 1.70 by the applicant who is the actual inventor, or each applicant who is a joint inventor. Such amendment must be diligently made and have the written consent of any assignee. In like manner, if an international application for patent designating the United States of America has been made through error without any deceptive intention by two or more persons as joint inventors, when they were not in fact joint inventors, or all the actual joint inventors, the international application may be corrected by amendment before the United States Patent and Trademark Office to remove the names of those not inventors and add the names of the actual joint inventors, or to include all the joint inventors. Such amendment must be accompanied by a statement of the facts verified by the original applicants and an oath or declaration as required by § 1.70 by each applicant who is a joint inventor. Such amendment must be diligently made and have the written consent of any assignee.

SIDNEY A. DIAMOND,
Commissioner of Patents and Trademarks.

Dec. 15, 1980.

Approved: Dec. 24, 1980.

JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 51-675 Filed 1-9-81; 8:45 am]

Rules of Practice in Patent Cases; Deposit of Computer Program Listings

37 CFR Part 1

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: Rules of practice are amended to provide special procedures for presentation of computer program listings in the form of microfiche in patent applications. Use of microfiche is desirable in view of the number of computer program listings being submitted as part of the disclosure in patent applications. Such listings are often several hundred pages in length. By filing and publishing such computer program listings on microfiche rather than on paper, substantial cost savings can result to the applicants, the public, and the Patent and Trademark Office.

DATES: Sections 1.77 and 1.96 effective Jan. 12, 1981. Section 1.21 effective Mar. 13, 1981.

FOR FURTHER INFORMATION CONTACT: Mr. Louis O. Maassel by telephone at (703) 557-3070 or, for details of the specifications, Mr. J. Kent Hughes at (703) 557-0410, or by mail marked to their attention addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This notice changes two rules and adds a new rule to provide suitable procedures for presenting computer program listings where such listings are submitted with applications for patent to fulfill the disclosure requirements of 35 U.S.C. 112.

Classification

This amendment of Part I of Title 37 CFR is deemed significant under procedures established by the Department of Commerce pursuant to Executive Order 12044.

Regulatory Analysis

The Patent and Trademark Office has reviewed the amendment and determined that it will have no potential major economic consequences requiring the preparation of a regulatory analysis under Executive Order 12044.

Background

The notice of proposed rulemaking was published in the Federal Register of June 15, 1977 at 42 FR 30522 and in the Official Gazette of July 5, 1977 at 960 O.G. 2. An oral hearing was held on Sept. 13, 1977.

A computer program listing, as used in these rules, means the printout that lists, in proper sequence, the instructions, routines, and other contents of a program for a computer. The listing may be either in machine or machine-independent (object or source) programming language which will cause a computer to perform a desired task, such as solving a problem, regulating the flow of work in a computer, or controlling or monitoring events. The general description of the computer program listing will appear in the specification while computer program listing may appear either directly or as a microfiche as appendix to the specification and be incorporated into the specification by reference.

Discussion of the Background and Major Issues Involved

The provisions of 37 CFR 1.52 and 1.84 for submitting specifications and drawings on paper have been found suitable for most patent applications. However, when lengthy com-

puter program listings must be disclosed in a patent application in order to provide a complete disclosure, use of paper copies can become burdensome.

The cost of printing long computer programs in patent documents is also very expensive to the Patent and Trademark Office. Likewise, the issue fee, which must be paid by the applicant, is based on the number of pages and may be correspondingly high.

In the past, all disclosures part of a patent application were presented on paper with the exception of microorganisms. Under new section 1.96, several different methods for submitting computer program listings, including the use of microfiche are set forth.

Relatively short computer program listings (10 pages or less) will be submitted on paper and be printed as part of the patent. If the computer program listing is 10 or more pages in length, it may be submitted on either paper or microfiche, although microfiche is preferred.

Copies of publicly available computer program listings will be available from the Patent and Trademark Office at a cost of one dollar per microfiche or on paper at a cost of 30 cents per page. These costs represent the estimated costs to the Office of furnishing the copies.

Response to Public Comments Received

Nine individuals and organizations submitted written comments relating to the proposed rule change. Two additional individuals asked for clarification of certain points at the oral hearing.

All of the suggestions relating to clarification of the rules were adopted.

The proposal to accept microfiche for 10 or less pages of listing was not adopted since such listings cause no serious printing or cost problems. It is not considered to be cost effective to prepare and maintain a microfiche on so few pages.

The suggestion to permit lined paper was not adopted since high-quality reproduction procedures used would pick up such lines.

A number of proposals were directed to permitting listings to be filed on other forms of microfilm and machine readable material. Such proposals were not adopted at this time in view of the difficulty to the public and the office of reading and reproducing such material on a single machine.

The mandatory use of microfiche for listings over 50 pages has been deleted since such a mandatory requirement would conflict with the Patent Cooperation Treaty requirements.

Other Information

The micrographic standards referred to in section 1.96(b)(2) may be obtained from either the National Micrographic Association, 8719 Colesville Road, Silver Spring, Md. 20910 or the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

Amendment of Regulations

For the reasons set out in the preamble and under the authority given to the Commissioner of Patents and Trademarks by 35 USC §§ 6 and 41, Part 1 of Title 37 CFR is amended as set forth below.

1. Section 1.21 is amended by adding a new paragraph (1) to read as follows:

§ 1.21 *Patent and miscellaneous fees and charges*

* * * * *

(1) The fee for obtaining a microfiche copy of an available microfiche, per microfiche ---------- $1.00

* * * * *

2. Section 1.77 is amended by revising paragraph (c) to read as follows:

§ 1.77 *Arrangement of application*

* * * * *

(c)(1) Cross-reference to related applications, if any.

(2) Reference to a "microfiche appendix" if any. (See Section 1.96(b)). The total number of microfiche and total number of frames should be specified.

* * * * *

3. A new Section 1.96 is added and reads as follows:

§ 1.96 *Submission of computer program listings*

Descriptions of the operation and general content of computer program listings should appear in the description portion of the specification. A computer program listing for the purpose of these rules is defined as a print-out that lists in appropriate sequence the instructions, routines, and other contents of a program for a computer. The program listing may be either in machine or machine-independent (object or source) language which will cause a computer to perform a desired procedure or task such as solve a problem, regulate the flow of work in a computer, or control or monitor events. Computer program listings may be submitted in patent applications in the following forms:

(a) *Material which will be printed in the patent.* If the computer program listing is contained on 10 printout pages or less, it must be submitted either as drawings or as part of the specification.

(1) *Drawings.* The listing may be submitted in the manner and complying with the requirements for drawings as provided in Section 1.84. At least one figure numeral is required on each sheet of drawing.

(2) *Specification.*

(i) The listing may be submitted as part of the specification in accordance with the provisions of Section 1.52, at the end of the description but before the claims.

(ii) The listing may be submitted as part of the specification in the form of computer printout sheets (commonly 14 by 11 inches in size) for use as "camera ready copy" when a patent is subsequently printed. Such computer printout sheets must be original copies from the computer with dark solid black letters not less than 0.21 cm high, on white, unshaded and unlined paper, the printing on each sheet must be limited to an area 9 inches high by 13 inches wide, and the sheets should be submitted in a protective cover. When printed in patents, such computer printout sheets will appear at the end of the description but before the claims and will usually be reduced about ½ in size with two printout sheets being printed as one patent specification page. Any amendments must be made by way of submission of a substitute sheet if the copy is to be used for camera ready copy.

(b) *As an appendix which will not be printed.* If a computer program listing printout is 11 or more pages long, applicants may submit such listing in the form of microfiche, referred to in the specification (see § 1.77(c)(2)). Such microfiche filed with a patent application is to be referred to as a "microfiche appendix." The "microfiche appendix" will not be part of the printed patent. Reference in the application to the "microfiche appendix" should be made at the beginning of the specification at the location indicated in § 1.77(c)(2). Any amendments thereto must be made by way of revised microfiche. All computer program listings submitted on paper will be printed as part of the patent.

(1) *Availability of appendix.* Such computer program listings on microfiche will be available to the public for inspection, and paper on microfiche copies thereof will be separately available for purchase, after a patent based on such an application is granted or the application is otherwise made publicly available.

(2) *Submission requirements.* Computer-generated information submitted as an appendix to an application for patent shall be in the form of microfiche in accordance with the standards set forth in the following American National (ANSI) or National Micrographics Association (NMA) Standards (Note: As new editions of these standards are published, the latest shall apply):

ANSI PH 1.28–1976—Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Cellulose Ester Base.

ANSI PH 1.41–1976—Specifications for Photographic Film for Archival Records, Silver-Gelatin Type, on Polyester Base.

NMA–MS1 (1971)—Quality Standards for Computer Output Microfilm.

ANSI/NMA MS2 (1978)—Format and Coding Standards for Computer Output Microfilm.

NMA MS5 (ANSI PH 5.9–1975)—Microfiche of Documents.

ANSI PH 2.19 (1959)—Diffuse Transmission Density.

except as modified or clarified below:

(i) Either Computer-Output-Microfilm (COM) output or copies of photographed paper copy may be submitted. In the former case, NMA standards MS1 and MS2 apply; in the latter case, standard MS5 applies.

(ii) Film submitted shall be first generation (camera film) negative appearing microfiche (with emulsion on the back side of the film when viewed with the images right reading).

(iii) Reduction ratio of microfiche submitted should be 24 :1 or a similar ratio where variation from said ratio is required in order to fit the documents into the image area of the microfiche format used.

(iv) Film submitted shall have a thickness of at least .005 inches (0.13 mm) and not more than .009 inches (0.23 mm) for either cellulose acetate base or polyester base type.

(v) Both microfiche formats A1 (98 frames, 14 columns x 7 rows) and A3 (63 frames, 9 columns x 7 rows) which are described in NMA standard MS2 (A1 is also described in MS5) are acceptable for use in preparation of microfiche submitted.

(vi) At least the left-most ⅛ (50 mm x 12 mm) of the header or title area of each microfiche submitted shall be clear or positive appearing so that the Patent and Trademark Office can apply serial number and filing date thereto in an eye-readable form. The middle portion of the header shall be used by applicant to apply an eye-readable application identification such as the title and/or the first inventor's name. The attorney's docket number may be included. The final right-hand portion of the microfiche shall contain sequence information for the microfiche, such as 1 of 4, 2 of 4, etc.

(vii) Additional requirements which apply specifically to microfiche of filmed paper copy.

(a) The first frame of each microfiche submitted shall contain a standard test target which contains five NBS Microcopy Resolution Test Charts (No. 1010A), one in the center and one in each corner. See illustration on page 2 of NMA Recommended Practice MS104. Inspection and Quality Control of First Generation Silver Halide Microfilm. See also paragraph 7 of NMA–MS5.

(b) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(c) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(d) Pagination of the microfiche frames shall be from left to right and from top to bottom.

(e) At a reduction of 24 :1 resolution of the original microfilm shall be least 120 lines per mm (5.0 target) so that reproduction copies may be expected to comply with provisions of paragraph 7.1.4, of NMA Standard MS5.

(f) Background density of negative appearing cameras master microfiche of filmed paper documents shall be within the range 0.9 to 1.2 and line density should be no greater than 0.08. The density shall be visual diffuse density as measured using the method described in ANSI Standard PH 2.19.

(g) An index, when included, should appear in the last frame (lower right hand corner when data is right-reading) of each microfiche. See NMA–MS5, paragraph 6.6.

(viii) Microfiche generated by Computer Output Microfilm (COM).

(A) Background density of negative-appearing COM-generated camera master microfiche shall be within the range of 1.5 to 2.0 and line density should be no greater than 0.2. The density shall be visual diffuse density as described in ANSI PH 2.19.

(B) The first frame of each microfiche submitted should contain a resolution test frame in conformance with NMA standard MS1.

(C) The second frame of each microfiche submitted must contain a fully descriptive title and the inventor's name as filed.

(D) The pages or lines appearing on the microfiche frames should be consecutively numbered.

(E) It is preferred that pagination of the microfiche frames be from left to right and top to bottom but the alternative, i.e., from top to bottom and from left to right, is also acceptable.

(F) An index, when included, should appear on the last frame (lower right hand corner when data is right reading) of each microfiche.

(G) Amendment of microfiche must be made by way of replacement microfiche.

SIDNEY A. DIAMOND,
Dec. 19, 1980. *Commissioner of Patents and Trademarks.*

Approved: Dec. 30, 1980.
JORDAN J. BARUCH,
Assistant Secretary for Productivity, Technology and Innovation.

[FR Doc. 81–1012 Filed 1–9–81; 8:45 am]

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

Re. 27,400, Re. S.N. 191,127, Filed Sep. 28, 1980, Cl. 174/38, MOUNTING PEDESTAL FOR UTILITIES, Anne D. Nickola, Owner of Record: *Inventor,* Attorney or Agent: Ernest I Gifford, et al., Ex. Gp.: 213

Re. 27,690, Re. S.N. 205,167, Filed Nov. 10, 1980, Cl. 198/852, FLAT WIRE CONVEYOR BELT HAVING SLOTTED BAR LINKS, Gerald C. Roinestad, et al., Owner of Record: *Ashworth Bros., Inc., Fall River, Mass.,* Attorney or Agent: William W. Beckett, et al., Ex. Gp.: 313

3,792,133, Re. S.N. 183,327, Filed Sep. 2, 1980, Cl. 264/33, METHOD FOR SLIP-FORMING WALLS OF ASYMMETRICAL TRANSVERSE CROSS SECTION, Roy Robert Goughnour, Owner of Record: *A. C. Aukerman Co., Jackson, Mich.,* Attorney or Agent: Ducan F. Beaman, et al., Ex. Gp.: 147

3,978,650, Re. S.N. 198,032, Filed Oct. 17, 1980, Cl. 368/200, ELECTRONIC TIMEPIECE, Yukio Hashimoto, et al., Owner of Record: *Citizen Watch Co., Ltd., Tokyo, Japan,* Attorney or Agent: Frank J. Jordan, Ex. Gp.: 217

3,984,299, Re. S.N. 198,526, Filed Oct. 20, 1980, Cl. 204/181, PROCESS FOR ELECTRODEPOSITING CATIONIC COMPOSITIONS, Robert D. Jerabek, Owner of Record: *PPG Industries, Inc., Pittsburgh, Pa.,* Attorney or Agent: William E. Dominick, et al., Ex. Gp.: 114

4,014,633, Re. S.N. 183,328, Filed Sep. 2, 1980, Cl. 425/63, ADJUSTABLE SLIP FORM, Roy Robert Goughnour, Owner of Record: *A. C. Aukerman Company, Jackson, Mich.,* Attorney or Agent: Townsend F. Beaman, et al., Ex. Gp.: 147

4,024,979, Re. S.N. 117,456, Filed Feb. 1, 1980, Cl. 241/220, HANDLING RING FOR PLASTIC DRUM, Walter J. Craig, et al., Owner of Record: *Inventor,* Attorney or Agent: Edward D. Gilhooly, Ex. Gp.: 241

4,053,380, Re. S.N. 200,087, Filed Oct. 23, 1980, Cl. 204/163 R, 1,1,1-TRIHALOGENO-4-METHYLPENTENES, METHOD OF PREPARING THE SAME AND USE OF THE SAME IN THE PREPARATION OF 1,1-DIHALOGENO-4-METHYL-1,3-PENTADIENES, Yoshiji Fujita, et al., Owner of Record: *Kuraray Company, Ltd., Kurashiki-City, Japan,* Attorney or Agent: William L. Mathis, et al., Ex. Gp.: 223

4,070,031, Re. S.N. 115,072, Filed Jan. 24, 1980, Cl. 280/103, STEERING LINKAGES, Donald G. M. Whittaker, Owner of Record: *Inventor,* Attorney or Agent: Martin Fleit, et al., Ex. Gp.: 316

4,072,668, Re. S.N. 119,230, Filed Feb. 7, 1980, Cl. 260/112.5 LH, LH-RH ANALOGS, Max S. Amoss, et al., Owner of Record: *The Salk Institute for Biological Studies, San Diego, Calif.,* Attorney or Agent: William E. Anderson, et al., Ex. Gp.: 125

4,103,818, Re. S.N. 170,591, Filed Jul. 21, 1980, Cl. 229/15, CARTON DIVIDER, Wallace O. Raubenheimer, Owner of Record: *Inventor,* Attorney or Agent: Lorimer P. Brooks, et al., Ex. Gp.: 241

4,121,507, Re. S.N. 199,854, Filed Oct. 23, 1980, Cl. 99/275, APPARATUS FOR MIXING A CARBONATED BEVERAGE, Alexander Kuckens, Owner of Record: *Dagma Deutsche Automaten and Getrankemschinen G.m.b., Reinfeld/Holst, Germany,* Attorney or Agent: Dale R. Small, Ex. Gp.: 242

4,121,857, Re. S.N. 199,852, Filed Oct. 23, 1980, Cl. 282/11.5 A, CONTINUOUS STATIONERY ASSEMBLIES, Per Weien Halse, Owner of Record: *Moore Business Forms, Inc., Niagara Falls, N.Y.,* Attorney or Agent: George B. Newitt, et al., Ex. Gp.: 322

4,125,792, Re. S.N. 202,882, Filed Nov. 3, 1980, Cl. 310/268, BRUSHLESS D-C MOTOR, Fritz Schmider, Owner of Record: *Papst-Motoren KG, Georgen, Germany,* Attorney or Agent: Horst M. Kasper, Ex. Gp.: 212

4,136,283, Re. S.N. 206,103, Filed Nov. 12, 1980, Cl. 250/363 S, TOMOGRAPHIC APPARATUS AND METHOD, Alvin S. Blum, Owner of Record: *Inventor,* Attorney or Agent: Ernest S. Kettelson, Ex. Gp.: 256

4,156,980, Re. S.N. 180,594, Filed Aug. 25, 1980, Cl. 42/44, BREECH OPENING APPARATUS FOR HAND-GUN, John E. Aspenwall, Owner of Record: *Inventor,* Attorney or Agent: B. Deon Criddle, et al., Ex. Gp.: 221

4,188,782, Re. S.N. 202,386, Filed Oct. 30, 1980, Cl. 60/733, FUEL VAPORIZING COMBUSTOR TUBE, B. Clark Smith, et al., Owner of Record: *Caterpillar Tractor Co., Peoria, Ill.,* Attorney or Agent: Ralph E. Walters, et al., Ex. Gp.: 343

4,201,905, Re. S.N. 199,631, Filed Oct. 22, 1980, Cl. 219/121 L, LASER CUTTING HEAD ATTACHMENT FOR PUNCH PRESSES, Stephen C. Clark, et al., Owner of Record: *Houdaille Industries, Inc., Fort Lauderdale, Fla.,* Attorney or Agent: James Van Santen, et al., Ex. Gp.: 213

4,208,036, Re. S.N. 204,705, Filed Nov. 6, 1980, Cl. 254/150 R, WINCH, Richard David John Huggett, et al., Owner of Record: *Lewmar Marine Limited, Hampshire, England,* Attorney or Agent: John W. Malley, et al., Ex. Gp.: 242

4,217,413, Re. S.N. 195,584, Filed Oct. 9, 1980, Cl. 435/94, NOVEL MALTULOSE-CONTAINING SYRUPS AND PROCESS FOR MAKING THE SAME, Raoul Walon, Owner of Record: *CPC International Inc., Englewood Cliffs, N.J.,* Attorney or Agent: Ellen P. Trevors, et al., Ex. Gp.: 172

4,222,716, Re. S.N. 197,401, Filed Oct. 16, 1980, Cl. 417/310, COMBINED PRESSURE MATCHING AND CAPACITY CONTROL SLIDE VALVE ASSEMBLY FOR HELICAL SCREW ROTARY MACHINE, David N. Shaw, Owner of Record: *Dunham-Bush, Inc., West Hartford, Conn.,* Attorney or Agent: Richard C. Sughrue, et al., Ex. Gp.: 343

PATENT NOTICES

Certificates of Correction for the Week of Feb. 17, 1981

Re. 30,267	4,207,985	4,223,648	4,229,823
3,645,121	4,209,391	4,224,127	4,230,222
4,125,407	4,209,445	4,224,129	4,230,677
4,137,131	4,211,756	4,226,211	4,231,792
4,149,513	4,212,000	4,226,226	4,231,926
4,165,488	4,214,875	4,226,239	4,232,060
4,169,755	4,215,114	4,226,312	4,232,256
4,179,404	4,217,868	4,226,478	4,232,418
4,187,184	4,217,915	4,226,566	4,232,526
4,188,303	4,218,291	4,226,628	4,232,755
4,189,486	4,218,429	4,226,664	4,232,804
4,190,871	4,218,539	4,226,926	4,233,742
4,191,368	4,218,568	4,227,004	4,233,794
4,196,832	4,219,168	4,227,015	4,233,914
4,199,025	4,219,480	4,227,359	4,233,950
4,199,815	4,219,597	4,227,608	4,234,029
4,200,389	4,220,317	4,227,983	4,234,190
4,202,225	4,221,352	4,228,131	4,234,735
4,205,011	4,221,693	4,228,199	4,234,847
4,205,074	4,221,735	4,229,432	4,234,906
4,206,735	4,222,339	4,229,537	4,235,587
4,207,188	4,222,745	4,229,595	4,235,605
4,207,912	4,222,781	4,229,597	

Disclaimers

3,965,449.—*Louis Albert Bevacqua,* Des Plaines, Ill. TREADLE BAR DRIVEN POTENTIOMETER. Patent dated June 22, 1976. Disclaimer filed Dec. 8, 1980, by the assignee, *Motorola, Inc.*

Hereby enters this disclaimer to claims 1, 3, 4, 7 and 8 of said patent.

4,240,652.—*Lip F. Wong* and *Benton A. Whiteman,* Richmond, Va. LIGHTWEIGHT DRILL ROD. Patent dated Dec. 23, 1980. Disclaimer filed Dec. 8, 1980, by the assignee, *Reynolds Metals Company.*

Hereby enters this disclaimer to claim 1 of said patent.

Dedication

3,883,655.—*Kjell Fuxe,* Stockholm, Sweden. ERGOCORNINE OR 2-BROMO-α-ERGOCYPTINE IN THE TREATMENT OF PARKINSONISM. Patent dated May 13, 1975. Dedication filed Dec. 8, 1980, by the assignee, *Fidelity Union Trust Company.*

Hereby dedicates said patent to the Public.

Errata

All reference to Patent No. 4,242,113, to Gunter J. Lissy of Ohio, for POWDER SPRAY BOOTH, appearing in the OFFICIAL GAZETTE of Dec. 30, 1980 should be deleted since no patent was granted.

All reference to Patent No. 4,243,170, to Michael D. Jones, White Bear Lake, Minn., for FOOD CONTAINER AND PROCESS FOR MANUFACTURING THE SAME, appearing in the OFFICIAL GAZETTE of Jan. 6, 1981 should be deleted since no patent was granted.

All reference to Reissue Patent No. Re. 30,470 to Dean W. Johnson, deceased, late of Euclid, Ohio, by Addressograph-Multigraph Corp., a corporation of Del., assignee, for ADDRESS PRINTING MACHINE WITH ROLLER PLATENS AND METHOD, appearing in the OFFICIAL GAZETTE of Jan. 6, 1981 should be deleted since no patent was granted.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and, possibly, foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), Springfield, Va. 22161, for $5.00 each ($10.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to avoid premature disclosure. Claims and other technical data will usually be made available to serious prospective licensees upon execution of a non-disclosure agreement.

Requests for information on the licensing of particular inventions should be directed to the addresses cited for the agency-sponsors.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents,
National Technical Information Service,
U.S. Department of Commerce.

DEPARTMENT OF THE ARMY, OTJAG

Chief, Intellectual Property Division, Room 2D 444, Pentagon, Washington, D.C. 20310

Patent application 6-047,522. Flight Control System. Filed June 11, 1979.

Patent application 6-048,402. Structural Cores and Their Fabrication. Filed June 14, 1979.

Patent application 6-054,213. Airborne Hoist. Filed July 2, 1979.

Patent application 6-060,525. Efficient High Voltage Photovoltaic Cells. Filed July 25, 1979.

Patent application 6-068,044. Apparatus and Process for Measuring the Torque Transferred by Engine Shafts. Filed Aug. 20, 1979.

Patent application 6-070,772. Adjustable Parallel Fluidic Resistor Bank. Filed Aug. 30, 1979.

Patent application 6-071,976. Electronic Symbology Generation for Radar Plan Position Indicator (PPI) Displays Using Rotating Coils. Filed Sept. 4, 1979.

Patent application 6-072,274. Rocket In-Tube Spin Device and Rear Sabot. Filed Sept. 4, 1979.

Patent application 6-072,507. Quadrant Elevation Control Device. Filed Sept. 4, 1979.

Patent application 6-077,441. Gun Tube Orientation Sensor-Target Mirror. Filed Sept. 20, 1979.

Patent application 6-077,442. Apparatus and Method for Temperature Compensation of Fluidic Circuits. Filed Sept. 20, 1979.

Patent application 6-078,748. Fluidic Pulser. Filed Sept. 25, 1979.

Patent application 6-080,907. Simplified System for Estimating Pulse Radar Doppler Frequency. Filed Oct. 1, 1979.

Patent application 6-081,300. Low Cost Rocket Motor Case and Method of Fabrication. Filed Oct. 2, 1979.

Patent application 6-081,302. Selectable Drag Brakes for Rocket Range Control. Filed Oct. 2, 1979.

Patent application 6-081,303. Low Cost Multiple Round Launcher. Filed Oct. 2, 1979.

Patent application 6-081,998. Nickel Analysis Device. Filed Oct. 4, 1979.

Patent application 6-082,264. Small Arms Ammunition. Filed Oct. 5, 1979.

Patent application 6-083,040. Omni-Directional Compound Paraboloid-Hyperboloid Radiation Device. Filed Oct. 9, 1979.

Patent application 6-083,071. Method of Operating a Cold Cathode-Cold Reservoir Thyratron. Filed Oct. 9, 1979.

Patent application 6-084,047. Safing and Arming Signature for Fuzes. Filed Oct. 12, 1979.

Patent application 6-084,984. Method and Apparatus for Removal of Sodium Carbonate From Cyanide Plating Baths. Filed Oct. 15, 1979.

Patent application 6-087,891. Fluidic Waste Gate. Filed Oct. 24, 1979.

Patent application 6-092,123. Tie-Down Assembly. Filed Nov. 7, 1979.

Patent application 6-095,731. Antenna With Sum and Error Patterns. Filed Nov. 19, 1979.

Patent application 6-095,746. Military Vehicle Having External Gun. Filed Nov. 19, 1979.

Patent application 6-101,327. Gas Generator-Actuated Fire Suppressant Mechanism. Filed Dec. 6, 1979.

Patent application 6-108,903. Digital Filter Bank Detector. Filed Dec. 31, 1979.

Patent application 6-109,598. Radiation Dose Rate Meter. Filed Jan. 4, 1980.

Patent application 6-110,955. Near Millimeter Wave Generator With Dielectric Cavity. Filed Jan. 10, 1980.

Patent application 6-110,958. Fluidic Oil Viscometer. Filed Jan. 10, 1980.

Patent application 6-111,738. Broad Band Flueric Amplifier. Filed Jan. 14, 1980.

Patent application 6-114,033. Method for Determining Oxidative Status of Unsaturated Lipids and Method for Evaluation Antioxidant Effectiveness in Lipid-Polypeptide Layers. Filed Jan. 21, 1980.

Patent application 6-114,035. Method of Visually Detecting Antioxidant in an Organic Mixture. Filed Jan. 21, 1980.

Patent application 6-114,777. A Half Duplex Integral Vocoder Modem System. Filed Jan. 23, 1980.

Patent application 6-118,044. Drive Mechanism. Filed Feb. 4, 1980.

Patent application 6-132,205. Acceleration Switch. Filed Mar. 20, 1980.

Patent application 6-132,940. Steerable Null Antenna Processor With Gain Control. Filed Mar. 24, 1980.

Patent application 6-132,941. Adaptive Steerable Null Antenna Processor. Filed Mar. 24, 1980.

Patent application 6-133,173. Electromagnetic Interference Suppression in a Vehicle Horn Circuit. Filed Mar. 24, 1980.

Patent application 6-133,735. Method and Apparatus for Detonating Explosive in Response to Detonation of Remote Explosive. Filed Mar. 25, 1980.

Patent application 6-138,477. MIC Combiner Using Unmatched Diodes. Filed Apr. 9, 1980.

Patent application 6-138,946. Propellant Charge With Reduced Muzzle Smoke and Flash Characteristics. Filed Apr. 9, 1980.

Patent application 6-146,580. Key-to-Address Transformations. Filed May 5, 1980.

Patent application 899,772. Dual Caliber Revolver. Filed Apr. 24, 1978.

Patent application 904,366. Null Steering Antenna. Filed May 10, 1978.

Patent 4,183,303. Proximity Fuze. Filed Feb. 25, 1963. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,184,073. Fast Response Electron Spectrometer. Filed May 25, 1978. Patented Jan. 15, 1980. Not available NTIS.

Patent 4,185,252. Microstrip Open Ring Resonator Oscillators. Filed May 10, 1978. Patented Jan. 22, 1980. Not available NTIS.

Patent 4,186,434. Means for Producing and Controlling Dead-Time of the Switching Transistors DC-to-DC and DC-to-AC Converters. Filed Mar. 23, 1978. Patented Jan. 29, 1980. Not available NTIS.

Patent 4,190,000. Mine Proximity Fuse. Filed Oct. 23, 1962. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,083. Fluidic Logical Pyrotechnic Initiator. Filed Sept. 7, 1977. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,769. Thermal Image Camera With Storage. Filed June 7, 1978. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,190,883. Switching-Regulated DC-to-DC Converter. Filed Aug. 24, 1977. Patented Feb. 26, 1980. Not available NTIS.

Patent 4,191,052. Non-Contact Flueric Temperature Sensing Method and Apparatus. Filed Nov. 27, 1978. Patented Mar. 4, 1980. Not available NTIS.

Patent 4,196,626. Flueric Notch Filter Temperature or Density Sensor. Filed Nov. 27, 1978. Patented Apr. 8, 1980. Not available NTIS.

Patent 4,197,483. Submillimeter Wave Generation Using Surface Acoustic Waves in Piezoelectric Materials. Filed Oct. 18, 1978. Patented Apr. 8, 1980. Not available NTIS.

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health, Chief, Patent Branch
Westwood Bldg., Bethesda, Md. 20205

Patent application 6-163,952. Intracranial Pressure Monitoring Device. Filed June 30, 1980.

Patent application 6-181,465. Nondenaturing Zwitterionic Detergents for Membrane Biochemistry. Filed Aug. 26, 1980.

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*Collection organized by subject matter.

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PATENT EXAMINING CORPS

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CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 29, 1980

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-23-79
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	10-10-79
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthodontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	9-11-79
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director. Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	12-12-79
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-5-79
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—Vacant. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	1-8-79
SPECIAL LAWS ADMINISTRATION, GROUP 220—Vacant. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy; Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	7-2-79
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—Vacant. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	10-9-79
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling.	1-22-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-21-78
DESIGNS, GROUP 290—Vacant. Industrial Arts; Household, Personal and Fine Arts.	1-8-79
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-18-79
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-20-79
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-1-79
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	6-1-79
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—G. M. FORLENZA, Director. Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Misc. Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	3-19-79

Expiration of patents: The patents within the range of numbers indicated below expire during November 1980, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,109,176 to 3,112,486, inclusive
Plant Patents ..... Numbers 2,295 to 2,323, inclusive

REISSUES

FEBRUARY 17, 1981

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

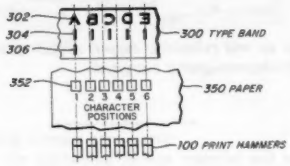
Re. 30,515
HIGH SPEED PRINTER

Robert H. Curtiss, Wayland; Derek J. Gardiner, Sudbury, and Seldan A. Lazarow, Framingham, all of Mass., assignors to Iomec, Inc., Minnetonka, Minn.

Original No. 3,795,186, dated Mar. 5, 1974, Ser. No. 876,770, Nov. 14, 1969. Application for reissue Oct. 16, 1978, Ser. No. 952,002

Int. Cl.[3] **B41J** *1/20*

U.S. Cl. 101—93.14 **19 Claims**



1. An impact printer comprising a continuously moving type carrier with a number of characters thereon defining at least one type font, a plurality of sets of impacting hammers, *each hammer having a position within one of said sets, the hammers in like positions among the sets being simultaneously in alignment with respective ones of said characters,* said hammers being adapted to be moved from a cocked position to an impact position, the total number of hammers equal to the number of character positions defining a line of print, each line of print being applied sequentially, holding means for maintaining each of said hammers in said cocked position, releasing means coupled to each of said holding means and responsive to activation thereof for selectively releasing each hammer to said impact position to coact withsaid carrier and thereby impacting a print medium, each hammer having a predetermined flight time from said cocked position to said impact position, a plurality of *time-shared hammer* drivers *in one to one correspondence with said hammer sets* coupled to said releasing means for selective activation thereof by application thereto of a release pulse said release pulse being of substantially less duration than said hammer flight time, means for coupling each said driver to various ones of said releasing means during each said line print sequence [for supplying] *and adapted to supply* a plurality of sequential release pulses from [at least one] *each* driver to a plurality of releasing means *respectively associated with the hammers of the set corresponding to said driver,* during a single hammer flight time, *release pulses being simultaneously applied to release means associated with hammers occupying like positions in different sets,* a first sensing means responsive to said character type and coupled to a character code generator, a memory containing sequences of desired character information, a comparator, said comparator responsive to said memory and said character code generator and coupled to said drivers for selectively actuating said drivers to release hammers in accordance with said sequences of desired character information, a plurality of fiduciary marks on said type carrier, second sensing means responsive thereto, a timing means responsive to said second sensing means for providing timing pulses, and means coupling said timing pulses to said comparator and said driver for synchronizing operation thereof in accordance with character position relative to hammer locations.

Re. 30,516
PROCESS FOR PERMANENTLY WAVING HAIR USING A SELF-HEATING NEUTRALIZING COMPOSITION CONTAINING A WATER-SOLUBLE SULFITE, METABISULFITE OR BISULFITE AND H_2O_2

Jean-Louis Abegg, and Claire Gayet, both of Paris, France, assignors to L'Oreal, Paris, France

Original No. 4,011,878, dated Mar. 15, 1977, Ser. No. 528,481, Nov. 29, 1974. Division of Ser. No. 346,025, Mar. 29, 1973, Pat. No. 3,865,930. Application for reissue Mar. 12, 1979, Ser. No. 19,851

Claims priority, application Luxembourg, Apr. 4, 1972, 65009

Int. Cl.[3] **A45D** *7/00*

U.S. Cl. 132—7 **6 Claims**

1. A process for effecting the second stage of a permanent wave operation of the hair, said hair previously having been reduced, rinsed and wound on rollers, comprising the steps of treating said hair for a period of about 5 to 15 minutes with a composition consisting essentially of a mixture of a first component comprising a water-soluble salt selected from the group consisting of sodium, potassium and ammonium sulfite; sodium, potassium and ammonium metabisulfite; and sodium, potassium and ammonium bisulfite; and a second component comprising H_2O_2, the said components being present in amounts such that the said mixture exhibits a temperature rise of about 15° to 25° C. and contains free H_2O_2 in amounts of about 0.5–3 percent by weight of said composition, removing said rollers and rinsing said hair.

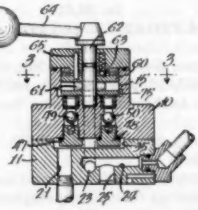
Re. 30,517
ROTARY VALVE

Samuel B. McClocklin, Owatonna, Minn., assignor to Owatonna Tool Company, Owatonna, Minn.

Original No. 4,049,019, dated Sep. 20, 1977, Ser. No. 723,025, Sep. 13, 1976. Application for reissue Jun. 4, 1979, Ser. No. 45,559

Int. Cl.[3] **F15B** *13/04*

U.S. Cl. 137—625.21 **10 Claims**



1. A valve having a body with a chamber, a pressure port, and a control port for controlling the flow of fluid to and from a fluid-operated member, passage means in said body between said control port and said chamber with said passage means having two communicating branch passages connecting to said chamber, a check valve positioned in one branch passage to block flow toward said chamber, and a valve member movable in said chamber and having means operable in a first neutral hold position to [connect said pressure port to tank] *prevent flow to said control port,* operable in a second position to connect said pressure port to said branch passage having the check valve for flow to the control port, and operable in a third position to connect the other of said branch passages to tank with movement of the valve member from the second position back to the first position not permitting flow from said control

port to said chamber because of said check valve [.], said valve member having a surface maintaining the other of said branch passages closed in both the first and second positions thereof as well as during movement of the valve member between said positions.

Re. 30,518

PNEUMATIC TIRE WEAR INDICATING TREAD PATTERN

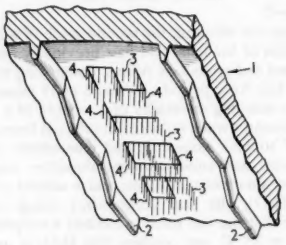
Tom French, Sutton Coldfield, England, assignor to Dunlop Holdings Limited, Birmingham, England

Original No. 3,653,422, dated Apr. 4, 1972, Ser. No. 834,714, Jun. 19, 1969. Application for reissue Mar. 2, 1979, Ser. No. 16,834

Claims priority, application United Kingdom, Jun. 29, 1968, 31199/68

Int. Cl.[3] **B60C** *11/00*

U.S. Cl. 152—209 R **3 Claims**



12. A pneumatic tire comprising a tread provided with at least one main drainage groove and a first, radially outer, and a second, radially inner, pattern each comprising at least one tread element selected from the group consisting of slots, sipes, grooves, incisions and the like, the first pattern changing to the second pattern at a level situated radially inwardly of and substantially parallel to the tread ground contacting surface of the tire, said level being a predetermined amount less than the depth of the main drainage groove, the second pattern being distinctively different from the first, being located immediately radially inwardly of and in radial alignment with said first pattern, and being in the form of at least one warning word.

Re. 30,519

ACCESSORY SUPPORT PLATES FOR A MAGNET BASE DRILL

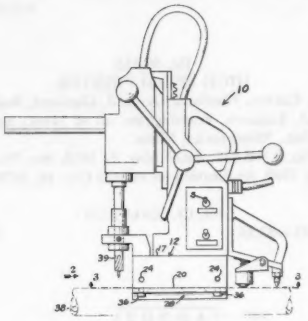
Everett D. Hougen, G-5072 Corunna Rd., Flint, Mich. 48504

Original No. 4,047,827, dated Sep. 13, 1977, Ser. No. 745,393, Nov. 26, 1976. Application for reissue Nov. 15, 1979, Ser. No. 94,591

Int. Cl.[3] **B23B** *39/00*

U.S. Cl. 408—76 **4 Claims**

13. In combination, a portable drill unit having an electromagnetic base for adherring the drill to a magnetic support, said base having a rectangular bottom wall and a pair of opposite side walls, a pair of plates formed of magnetic material and adapted to be mounted on said base for magnetically adherring the drill unit to a cylindrical support surface having a diameter less than the width of said base, each plate having a long planar leg and a short transversely inclined foot extending lengthwise along one edge thereof, means for mounting the plates one on each side wall of said base, said plates being adapted to be mounted on the side walls for vertical adjustment thereon with the feet extending along lower edges thereof and projecting inwardly toward each other in a plane below said bottom wall, and means for rendering said bottom wall and said plates magnetic when the electromagnet is energized, whereby, when said base is mounted on said support surface with the longitudinal central portion of said bottom wall abutting said surface, said plates can be adjusted vertically on the side walls of the base to a position wherein the opposed inner edge portions of said feet abut portions of said cylindrical support surface at locations spaced laterally outwardly on opposite sides from the central portion of said base, to thereby magnetically adhere the



drill unit on said cylindrical support surface in a stable position when the electromagnet is energized.

Re. 30,520

METHOD OF MANUFACTURING JACKETS AND LIKE GARMENTS

Claude R. Pierron, 7 Rue Albert 1 er, Epinal, Vosges, France

Original No. 35,004,795, dated Mar. 17, 1970, Ser. No. 778,984, Nov. 26, 1968. Application for reissue May 15, 1973, Ser. No. 360,425

Claims priority, application France, Nov. 27, 1967, 67.129867

Int. Cl.[2] **B32B** *31/00;* **A41D** *27/00*

U.S. Cl. 156—250 **39 Claims**

39. A method of manufacturing jackets and garments and like wearing apparel with sleeves of various lengths from any kind of supple sheet material, wherein the improvement consists in an industrial mass production by means of a substantially continuous assembly line formed from at least one indefinite initial web of material the width of which is at least equal to the maximum width of a jacket back and consisting in successively making respectively right and left pairs of sleeves and placing them in a flat-spread condition in at least two longitudinal rows of respectively right and left sleeves against and all along the said web in such a manner that the two sleeves of each pair are substantially symmetrical with respect to a longitudinal axis, longitudinally superposing on the said web over the said sleeves at least two elongated layers of materials laterally adjoined to the said web respectively along a longitudinal line extending at least close to one edge of the web and freely tranversity juxtaposed so as to each cover a different row of sleeves and intended to form respectively the left and right front sides of the jackets, wherein the said two layers are constituted by two additional separate indefinite webs assembled respectively along their outer longitudinal edge to the opposed edges of the said initial web, and wherein the sleeves are made independently in separate units before being placed on the said initial web, assembling the two layers and the said web respectively to the outer periphery of the upper end of the sleeves along corresponding arm-opening lines so as to form a series or sequence of jackets whose own longitudinal direction corresponds to the longitudinal direction of the assembly line, wherein at least some of the above mentioned assembling and fixing operations are performed by adherent sticking subsequent to preliminary gluing of the portions to be assembled, and separating or severing the finished individual jackets of the assembly line by cutting along at least approximately transverse jacket-bottom, neck-opening and shoulder lines, the jackets obtained at the exit of the assembly line being in a state folded inside out on the sleeves.

Re. 30,521

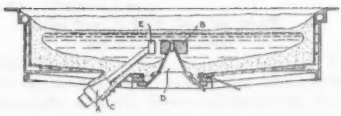
PRIMARY ELECTRODE ARRANGEMENT FOR HIGH TEMPERATURE MELTING FURNACE

Duane H. Faulkner, Cambridge City; Steven D. Sanford, Richmond, both of Ind., and Vaughn C. Chenoweth, Hollansburg, Ohio, assignors to Johns-Manville Corporation, Denver, Colo.

Original No. 3,983,309, dated Sep. 28, 1976, Ser. No. 578,439, May 16, 1975. Application for reissue Jun. 2, 1978, Ser. No. 911,738

Int. Cl.[3] **C03B** *5/02*

U.S. Cl. 13—6 **8 Claims**



1. In a melting furnace comprising:

a. a vessel for containing molten material and unmelted batch on the surface of the molten material forming an interface,

b. an electrically conducting member located within said vessel, and

c. at least two electrically conducting primary electrodes made from a refractory metal highly susceptible to oxidation at elevated temperatures in an oxidizing atmosphere inside said vessel having their tips spaced radially about said electrically conducting member, the improvement comprising:

d. each primary electrode having a portion thereof exposed through the top surface of the molten material to the unmelted batch and other environment adjacent to the top surface of the molten material, and

[e. each primary electrode having means around its exterior surface located where said electrode passes through said interface for cooling the electrodes in this vicinity to a temperature below that at which the material used to form said electrodes would rapidly oxidize in an oxidizing atmosphere.]

e. each primary electrode having a first fluid cooling means around its exterior surface located where said electrode passes through said interface for cooling the electrodes in this vicinity to a temperature below that at which the material used to form said electrodes would rapidly oxidize in an oxidizing atmosphere and a second cooling means, located at the interior of said primary electrode and in that portion of said electrode extending out of and beyond the top surface of the melt, for maintaining the temperature of said electrode portion below a temperature at which the material used to make the electrode would rapidly oxidize in an oxidizing atmosphere.

Re. 30,522

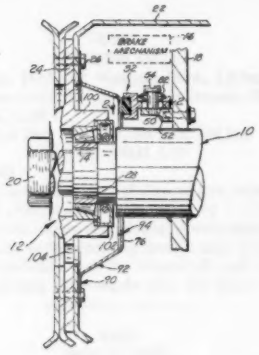
ROTOR FOR WHEEL SPEED SENSOR ASSEMBLY

Thomas A. Gee, Allen Park; Gerald L. Jacobs, Bloomfield Hills, and Gunnar Baltare, Livonia, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Original No. 3,961,215, dated Jun. 1, 1976, Ser. No. 546,375, Feb. 3, 1975. Continuation of Ser. No. 427,562, Dec. 26, 1973, abandoned. Application for reissue Jun. 13, 1977, Ser. No. 806,207

Int. Cl.[2] **H02K** *19/20*

U.S. Cl. 310—168 **3 Claims**



1. A rotor for use in a wheel speed sensor for sensing angular rotation of a wheel[support], said rotor having an axis of rotation and comprising a wall portion and a rotor face portion[wherein], said wall portion [extends] *adapted to be mounted to said wheel extending* in an axial direction coaxially about said axis *from a first annular edge portion to a second annular edge portion* and said rotor face portion [extends] *extending* generally radially inward from said second *annular* edge portion, [said wall portion further extending coaxially about said axis from a first annular edge portion to a second annular portion,] said rotor face portion being cantilevered from said second edge portion [and extending at an angle therefrom] and terminating in a peripheral edge which coaxially surrounds said axis and which is axially spaced from said first annular edge portion, said rotor face portion having undulations formed therein defining an annular array of equally spaced apart lands wherein adjacent lands are spaced apart from each other by a recess, said undulations being formed such that said lands and recesses extend for at least substantially the entire distance from said second annular edge to said peripheral edge, said recesses and lands extend toward said peripheral edge and terminate short thereof to define relatively a smooth peripheral edge coaxial about said axis, said wall portion and said rotor face portion are integral and formed from material having a generally uniform thickness T, said recesses in said rotor face portion having a depth H, where H is on the order of T, the distance between said peripheral edge and said second edge portion is substantially greater than said material thickness T, and said wheel is provided with an axially extending escape hole for trapped oil and grease.

PLANT PATENTS

GRANTED FEBRUARY 17, 1981

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,648

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Nov. 2, 1979, Ser. No. 90,670
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—11 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright, well branched habit of growth, its abundance of leathery foliage and its bud color of RHSCC 47A, the blossom aging from a pink similar to RHSCC 54B to a light pink similar to RHSCC 49D.

4,649

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Nov. 2, 1979, Ser. No. 90,660
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright plant, blossom color of RHSCC 34A, large brown prickles, slight fragrance and tendency to develop leaves of five or seven leaflets.

4,650

ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Co., Medford, Oreg.

Filed Nov. 2, 1979, Ser. No. 90,659
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—15 **1 Claim**

1. A new and distinct cultivar of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its vigorous, upright habit of growth, relatively large foliage, bud color of Wilson's Sulphur Yellow aging to Mimosa Yellow, very light fragrance.

4,651

ALMOND TREE

Cecil V. Horton, 14923 W. Westside Blvd., Livingston, Calif. 95334, assignor to Cecil V. Horton and Dorothy Horton, both of Livingston, Calif.

Filed Dec. 18, 1979, Ser. No. 104,880
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of almond tree, substantially as illustrated and described, characterized by a virorous tree having regular and heavy production of well-sealed nuts; and further characterized by blooming several days earlier than the Mission and interfertile with the Nonpareil, and by a harvest period approximately three weeks after the latter.

4,652

PEACH TREE

William J. Wilson, Fort Valley, Ga., assignor to Bountiful Ridge Nurseries, Inc., Princess Anne, Md.

Filed Jan. 4, 1980, Ser. No. 109,608
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 **1 Claim**

1. A new and distinct variety of peach tree of the yellow-fleshed, freestone, fruit-bearing type, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of large tree size, tall, vase formed and rapid growing, tendency to set fruit heavy requiring heavy thinning to properly size fruit, the fruit being very uniform in size, and more nearly globular than "Rio Oso Gem", more symmetrical with thick skin, smooth and tough, the overall color presenting a reddish general appearance from 35-12 to 35-13 and shading to 35-5 with some mottling over a yellow ground color, the early tendency to color, though picking must be delayed until the suture smooths, the pronounced aroma of the fruit and the good keeping quality for local, dessert and culinary use, having 'n addition good resistance to bacterial spot and definitely non-browning.

4,653

GERANIUM PLANT NAMED SUPER-WALTZTIME

Griffith J. Buck, Ames, Iowa, assignor to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Jan. 14, 1980, Ser. No. 112,114
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of geranium plant substantially as herein shown and described, characterized by a vigorous and much branched growth habit and a continuous and abundant year around flowering under photoperiod culture.

PLANT PATENTS

GRANTED FEBRUARY

[illegible]

PATENTS

GRANTED FEB. 17, 1981

ERRATA

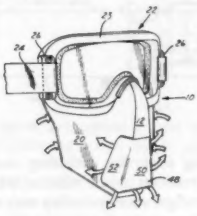
For CLASS	See PATENT NO.
434–327	4,250,633
434–006	4,250,634
434–060	4,250,635
434–055	4,250,636
434–114	4,250,637
474–207	4,250,764
432–015	4,250,774
493–203	4,250,796
493–058	4,250,797
493–306	4,250,798
440–001	4,250,829
126–430	4,250,885
137–607	4,250,929
157–017	4,250,936
369–248	4,251,080
048–192	4,251,226
048–197 R	4,251,227
048–197 R	4,251,228
424–001.5	4,251,360
252–040.7	4,251,431
564–215	4,251,459
546–132	4,251,460
564–204	4,251,461
564–455	4,251,462
564–454	4,251,463
564–453	4,251,464
564–479	4,251,465
568–330	4,251,466
568–393	4,251,467
568–001	4,251,468
204–098	4,251,478
426–580	4,251,567
429–049	4,251,568
369–136	4,251,695

PATENTS

GRANTED FEBRUARY 17, 1981

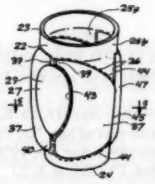
GENERAL AND MECHANICAL

4,250,577
FACE MASK FOR USE WITH GOGGLES
Robert P. Smith, P.O. Box 700, Evergreen, Colo. 80439
Filed Jul. 20, 1979, Ser. No. 59,227
Int. Cl.[3] A61F *9/02*
U.S. Cl. 2—427 **4 Claims**



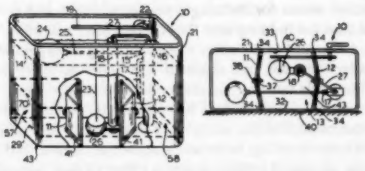
1. A lower face mask for use with a goggle comprising:
(a) a nose section arranged to cover the nose of a user,
(b) securing means on said nose section for securing the same to a goggle frame,
(c) cheek sections integral with and extending laterally and rearwardly of said nose section shaped so as to cover the user's lower face and be spaced from the face of the user and having terminating ends at about the side limits of the goggle,
(d) attachment means at the terminating ends of said cheek sections for attachment to a goggle frame,
(e) a perforate section below said nose section,
(f) venturi action cover means for said perforate section secured to and generally spaced from said perforate section including outwardly and rearwardly extending wing portions spaced from the lower cheek sections of the mask, and
(g) attachment means for securing said cover means over said perforate section and spaced therefrom so as to maintain a space between at least the side edges of said wing portions and said mask for a venturi action flow of air from the inside of said face mask through said perforate section caused by air passing over said venturi action cover means.

4,250,578
PROTECTIVE KNEE SUPPORT
Carl S. Barlow, Rte. 2, Box 187-36, Sandpoint, Id. 83864
Filed Mar. 16, 1979, Ser. No. 21,218
Int. Cl.[3] A41D *13/06*
U.S. Cl. 2—24 **12 Claims**



1. A non-rigid protective knee support, comprising:
an elongated patella cover pad member formed of flexible resilient material to extend over the surface of a knee anterior to the patella;
lateral and medial pad members formed of flexible resilient material positioned on opposite sides of the patella pad member;
said lateral and medial pad members being separate of the patella cover pad member;
a flexion pad member formed of flexible resilient material positioned between and separate from the lateral and medial pad members to cover the posterior surface of the knee;
a tubular elastic device separately mounting the patella cover pad member, lateral and medial pad members, and the flexion member so when the elastic device is placed over a knee, the members will overlap the distal end of the femur and the proximal end of the tibia with (a) the patella pad member extending substantially vertically along the anterior side of the patella, (b) the lateral and medial pad members covering lateral and medial surfaces of the knee between the patella and anterior surfaces of the tibia and femur, (c) the flexion pad member extending between the lateral pad members along the posterior side of the knee to enable the elastic device to stretch between the separated pad members and permit the pad members to flex substantially independently of each other; and
said elastic device having a top elastic edge adapted to encircle the thigh above said members and a bottom elastic edge adapted to encircle the calf below said members.

4,250,579
WATER SAVING PANEL DEVICE FOR WATER CLOSETS AND METHOD
Jacob R. Moon, Hillsborough, N.C., assignor to Moon Water Saver, Inc., Hillsborough, N.C.
Continuation of Ser. No. 734,643, Oct. 21, 1976, abandoned, which is a division of Ser. No. 245,531, Apr. 19, 1972, Pat. No. 4,009,497. This application May 30, 1978, Ser. No. 910,787
Int. Cl.[3] E03D *1/00*
U.S. Cl. 4—415 **2 Claims**



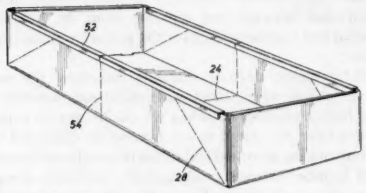
1. The method of forming a water column around the outlet valve in a water closet of a toilet flush tank of the single flush type having internal side and bottom wall surfaces and in which an outlet valve is located intermediate the length of said bottom wall and having associated plumbing mechanism for operating said valve as the exclusive control for flushing water from said tank comprising: compressing a compressible rectangular panel member, installing said compressed panel member in said tank such that said panel member is spaced from said outlet valve, and adjusting said panel member within said tank to bring the side and bottom edges thereof in relatively watertight compressed engagement with the internal side and bottom wall surfaces of said tank to form the water column around said outlet valve such that said valve in conjunction with the location of said panel member establishes and exclusively controls the amount of water flushed from and restored to said tank on each flushing operation thereof.

4,250,580

TRAVEL CRIB

Larry L. Eichenauer, 16210 Spinnaker Dr., Crosby, Tex. 77532

Filed Jun. 22, 1979, Ser. No. 51,012
Int. Cl.[3] A47D 7/00, 13/06
U.S. Cl. 5—93 R 7 Claims



1. A travel crib suitable for holding an infant comprising:

(a) a sheet of corrugated paperboard of a selected gauge of thickness, the sheet folding into a generally rectangular, open topped crib;

(b) a bottom portion in said sheet which is adapted to be rested on a bottom support therefor and to hold an infant thereon;

(c) an attached sidewall portion which is defined by a fold line adjacent to said bottom portion and which sidewall portion is erected on folding perpendicular to said bottom portion;

(d) an end portion which is defined by a fold line adjacent to said bottom portion and which end portion is erected on folding perpendicular to said bottom portion and is also erected perpendicular to said sidewall portion;

(e) a flap attached to one of said end wall or sidewall portions at a fold line, said fold line enabling said flap to be folded at an angle and which flap is attached to one of said end wall or sidewall portions at a location enabling said flap to be positioned adjacent to and parallel to the other of said sidewall or end wall portions;

(f) pocket means for defining a pocket to catch and enclose said flap for holding said flap therein after assembly;

(g) said flap and said pocket means forming a perpendicular joinder between said sidewall and end wall portions to define walls upright and above said bottom portion;

(h) a transverse, central fold line across said bottom portion;

(i) an extended fold line across said sidewall portions aligned with and extending from said transverse, central fold line;

(j) a pair of angled fold lines across either of said sidewall or end wall portions which angled fold lines extend from the corners defined by said bottom portion, sidewall portion and end wall portions such that said pair of fold lines enable folding therealong to reposition that portion of said sheet between said fold lines to be folded toward and parallel to said bottom portion which movement is coupled to the other of said end wall or sidewall portions which is pulled toward a parallel position;

(k) wherein said transverse and extended fold lines are parallel to one another and adjacent to one another to enable said bottom portion and said sidewall portions to be folded therealong through 180° to position said bottom portion in two parts adjacent to one another wherein said bottom portion parts are on opposite sides of said extended fold line; and

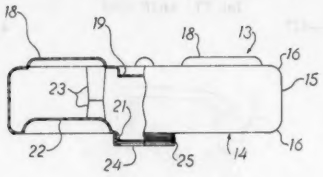
(l) wherein said sidewall and end wall portions are deployed parallel to one another and are subsequently erected above said bottom portion on erection of said travel crib.

4,250,581

BEE FEEDING APPARATUS

Harvey L. Kindall, Box 711, White Sulpher Springs, Mont. 59645

Filed Jun. 19, 1979, Ser. No. 50,120
Int. Cl.[3] A01K 53/00
U.S. Cl. 6—5 8 Claims



1. A bee feeding apparatus including a liquid container formed of a shock resistant plastic material with a single opening and having a configuration including major top and bottom portion of a size substantially the same as the top opening of a beehive, the edges of the top and bottom portions being joined by sidewall portions having a height substantially less than the width thereof, said top and bottom portion being joined with said sidewall portions in a curved section of substantial radius, said top portion including a plurality of rib sections symmetrically disposed about a recessed central section, said bottom portion including a raised central opening of a size slightly less than the recessed central sections of said top portion, said bottom portion including a plurality of rib sections symmetrically disposed about said raised central opening thereof, the rib sections in one of said top or bottom portions being raised and in the other portion being recessed, said recessed rib sections being of a size slightly larger than the corresponding raised rib sections of said top portion, a plurality of reinforcing members extending from said top portion to said bottom portion at points intermediate of said sidewall portion, cover means with a plurality of substantially uniform openings disposed over said raised central opening and means for securing said cover to said central opening, said plurality of uniform openings in said cover means being of a size sufficiently small so that when said apparatus is in an operative position and a substantial vacuum forms above the liquid in said container, there will be no significant flow or dripping of said liquid through said plurality of openings.

4,250,582

METHOD FOR THE FLUID TREATMENT OF TEXTILES

Jerald E. Brown, Jasper, Ga., assignor to Simon Klebanow, Greenwich, Conn.

Division of Ser. No. 895,507, Apr. 11, 1978, Pat. No. 4,183,233, which is a continuation-in-part of Ser. No. 792,721, May 2, 1977, abandoned. This application Apr. 16, 1979, Ser. No. 30,171
Int. Cl.[3] D06B 5/20
U.S. Cl. 8—149.1 9 Claims

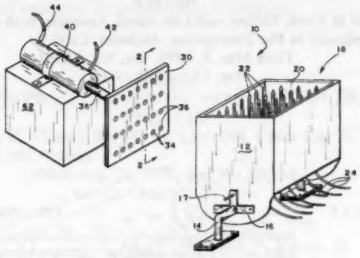
1. A method of treating a yarn skein with a fluid treating agent, which comprises;

providing the skein in the form of a loose bundle;

enclosing the bundle in a closed chamber;

compressing the bundle under a force of at least 5 lbs./square inch;

introducing the agent into the body of the compressed yarn bundle, initially at a selected site directly within said body;



dispersing the agent throughout a zone of the compressed bundle by introducing steam under pressure at the selected site; and

decompressing the bundle.

4,250,583

COLLAPSIBLE BOAT

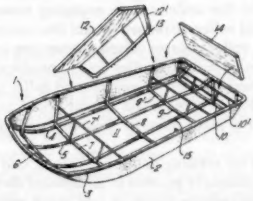
Ragnar A. Jensen, Kirkeveien 29, Oslo 2, Norway

Filed Mar. 21, 1979, Ser. No. 22,466

Claims priority, application Norway, Mar. 22, 1978, 781021

Int. Cl.[3] B63B *7/06*

U.S. Cl. 9—2 C **4 Claims**



1. A collapsible boat comprising a skeleton and a skin, impervious to water, in tension about the skeleton, said skeleton including a plurality of longitudinal and transverse frame members forming the stringers and formers of said skeleton, said frame members being attached to the gunwale frame of the boat and said transverse frame members being turnable relative to said gunwale frame, characterized in that the skin, which is made of a flexible material, is permanently attached to the gunwale frame and that the longitudinal frame members are hinge connected to the gunwale frame at front and rear portions thereof, said longitudinal frame members being turnable relative to said gunwale frame in a direction transversely of the boat, said longitudinal frame members along their horizontal portion each being provided with at least one hinge member being turnable through an angle of 180 degrees.

4,250,584

COLLAPSABLE SWIM FIN

Gerhard Korn, 378 N. Ave. 53, Los Angeles, Calif. 90042

Filed Jun. 11, 1979, Ser. No. 47,007

Int. Cl.[3] A63B *31/00*

U.S. Cl. 9—304 **14 Claims**

1. A collapsable fin comprising:

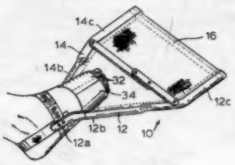
frame means for supporting said swim fin;

nonrigid blade means, attached to said frame means, for providing propulsion;

means for attaching said swim fin to a swimmer's foot;

tension means, adjustable connected to said frame means, for selectively positioning said frame means, to either tension or to collapse said nonrigid blade means; and

said frame means comprising two semi-rigid frame members each comprising a slender member having substantially planar sides divided into three distinct portions, with said first portion being disposed along one side of said foot attaching means, with the second portion diverging outwardly from said first portion, and with the third portion



extending forwardly from said second portion in parallel relation to the sides of said foot and with one of said planar sides disposed in generally parallel relation with the bottom of said foot.

4,250,585

WATER SKIS HAVING A REINFORCED, FOAMED-IN-PLACE, PLASTIC HULL BONDED TO AN ALUMINUM DECK

Maurice N. Theriault, Renton, Wash.; Roger C. Teeter, Stacy, and Francois Wirz, Roseville, both of Minn., assignors to Hart Ski Mfg. Co., Inc., St. Paul, Minn.

Filed Mar. 7, 1979, Ser. No. 18,280

Int. Cl.[3] A63C *15/00*

U.S. Cl. 9—310 A **6 Claims**

1. The process of manufacturing water skis which comprises the steps of:

(a) positioning small diameter steel rods, at least some of which extend substantially the length of the ski, within the cavity of a mold with plastic jigs which cause the rods to be spaced above the lower surface of the ski, said jigs becoming a part of the water ski;

(b) injecting a polyurethane foam into the mold against a prepositioned aluminum deck;

(c) allowing the polyurethane foam to harden in the mold while simultaneously bonding to the aluminum deck; and

(d) removing from the mold a water ski blank which has a reinforced plastic hull bonded to said aluminum deck.

4,250,586

VIBRATORY PAINT APPLICATOR AND SYSTEM

Martin R. Timian, 1518 7th St., Bremerton, Wash. 98310

Filed Mar. 7, 1979, Ser. No. 18,344

Int. Cl.[3] A46B *13/04*

U.S. Cl. 15—22 R **8 Claims**

1. A device for spreading paint uniformly over a work surface, comprising:

a manifold having an open end;

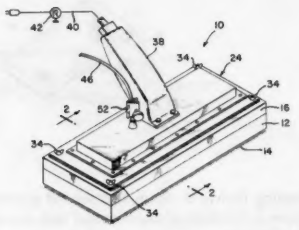
a multicellular pad having an upper and lower surface, the lower surface thereof covered with soft bristles for contacting the work surface;

a pad holder secured over the upper surface of the multicellular pad, including connecting means secured to the manifold to allow lateral movement of the pad and pad holder relative to the manifold;

distribution means in the pad holder for spreading paint

supplied to the interior of the manifold uniformly over the upper surface of the multicellular pad;

a vibrator unit secured to the manifold having a vibrating arm contacting the pad holder and multicellular pad to



impart vibratory lateral movement thereto relative to the manifold;

power means for operating the vibrator unit; and

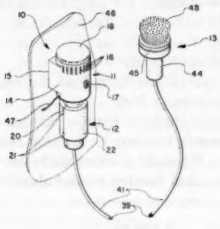
means for supplying paint to the interior of the manifold for distribution to the pad.

4,250,587

SCRUBBING DEVICE

John W. Beck, Jr., Country Club Rd., Morehead City, N.C. 28557

Filed Jul. 2, 1979, Ser. No. 53,741
Int. Cl.³ A46B *13/02*; F16D *7/00*
U.S. Cl. 15—28 **7 Claims**



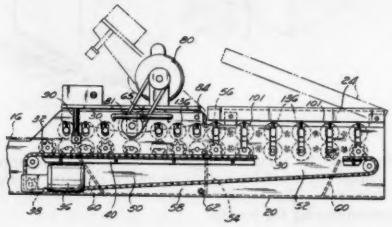
1. In a scrubbing means including a motor means, a flexible drive cable means, a clutch means operatively interposed between said motor means and one end of said cable means, and scouring means operatively mounted on the end of said cable means opposite clutch block means operatively connected to said motor means; a second clutch block means disposed in axial alignment with and juxtaposed to said first block means and operatively connected to said drive cable means; and an enclosing two piece clutch housing threadingly telescoped together and rotatively disposed about and in axial contact with said first and second clutch blocks whereby a torque control means is provided which is adjustable by tightening or loosening the threaded relationship between the clutch housings which in turn increases or decreases the binding contact between said first and said second clutch blocks.

4,250,588

BENCH TOP PRINTED CIRCUIT BOARD SCRUBBING DEVICE

Floyd R. Cook, Colton, and Luis Anzil, Anaheim, both of Calif., assignors to Par Enterprises, Anaheim, Calif.

Filed Mar. 5, 1979, Ser. No. 17,191
Int. Cl.³ A46B *13/04*
U.S. Cl. 15—77 **5 Claims**



1. A printed circuit board scrubbing apparatus comprising:

a frame;

conveying means supported by said frame for transporting a printed circuit board in a planar orientation, said conveying means comprising a plurality of rollers arranged in a first and second course extending along the length of said frame, said courses being vertically aligned with one another, said first roller course engaging means for rotating all of said rollers arranged in said first course, said first and second roller courses biased against one another such that rotation of said first roller course produces a simultaneous opposed rotation of said second roller course;

brush means for scrubbing said circuit board rotatably disposed upon a plate member pivotally mounted to said frame; and

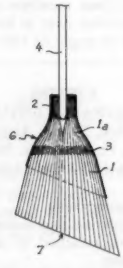
driving means for rotating said brush means, said plate member being selectively pivoted in an upward direction from said frame to provide access to said brush means and said conveying means.

4,250,589

ROAD SWEEPING BROOM

Pierre Alvin, 2 av. du Mont Saint Jean Antibes, Antibes, France (06600)

Filed Mar. 19, 1979, Ser. No. 21,884
Claims priority, application France, Mar. 21, 1978, 78 08193
Int. Cl.³ A46B *3/02*
U.S. Cl. 15—193 **6 Claims**



1. In a broom comprising a handle and a bundle of fibres bound together at one end and attached to one end of the handle, an improvement comprising means for connecting together said bundle of fibres in at least one other zone distinct from said end binding, said connecting means being a polymer-

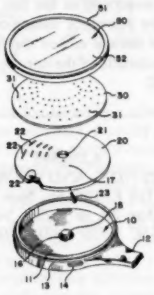
izable synthetic material coating all of the fibres in said bundle and adhering them together, said bundle of fibres comprising a mixture of synthetic fibres and vegetable fibres.

4,250,590

COVER PROTECTED BRUSH WITH COLLAPSIBLE BRISTLES

Sherman H. Chiang, 3rd Fl., 51, Lane 214, Chien Kuo N. Rd., Taipei 104, Taiwan

Filed Aug. 23, 1979, Ser. No. 69,114
Int. Cl.³ A46B *3/00, 7/00*
U.S. Cl. 15—203 **2 Claims**



1. A cover protected round brush assembly with collapsible bristles comprising a brush base, an integral handle extending from said brush base forming a solid piece, a rotatable bed mounted on said base, a plurality of groove holes through said bed, said groove holes each having an angled wall, angled in the same direction relative to the center of said bed, bristles mounted through each said groove hole from underneath said bed, said base including a circumferential wall, a slot in said wall, said further including; a pivot post in the center of the base about which a spring is secured at one end to the post, a protruding key mounted on the circumferential edge of said bed, said bed being mounted on said post through a first hole in the center of the bed such that the key extends out through said opening in the wall of the base for movement of the bed and collapsing said bristles, said spring having an other end secured to a second hole on said bed near said first hole, a rubber covering mounted on top of said bed and having a plurality of through holes corresponding to each said groove hole and having each of said bristles extending therethrough, and a protective cover for said assembly mounted and sized such that upon removing said cover, said spring causes rotatable movement of the bed extending said bristles upright.

4,250,591

SPONGE ROLLERS AND VACUUM MEANS FOR REMOVING WATER FROM VEHICLE IN A CAR WASH

Frank A. Mello, 623 S. 23rd Ave., Richmond, Calif. 94804

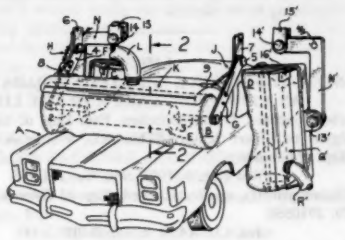
Filed Jul. 31, 1979, Ser. No. 62,292
Int. Cl.³ B60S *3/06*
U.S. Cl. 15—306 B **2 Claims**

1. Vacuum means for removing a film of water from a vehicle after the vehicle has been washed in a car wash; comprising

(a) a sponge roller rotatable about a horizontal axis;

(b) means for yieldingly supporting the roller and causing it to yieldingly contact the vehicle top as the vehicle moves thereunder, the sponge roller rolling over the vehicle top for removing the film of water remaining on the vehicle;

(c) a stationary vacuum shoe contacting the surface of the sponge roller and mounted on the means yieldingly supporting said roller; and



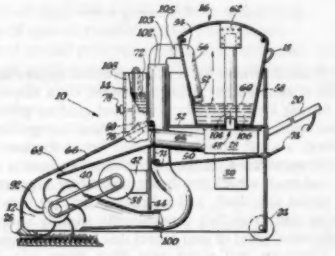
(d) means for creating a vacuum in said shoe for sucking up the water from said rotating roller and for discharging the water.

4,250,592

VACUUM CLEANER

Donald G. Emrick, 541 Holly La., Plantation, Fla. 33317

Continuation of Ser. No. 842,540, Oct. 17, 1977, abandoned.
This application Sep. 7, 1979, Ser. No. 73,505
Int. Cl.³ A47L *11/30*
U.S. Cl. 15—320 **3 Claims**



1. A floor covering vacuuming and cleaning apparatus comprising:

a housing defining a cavity with a transverse opening juxtapositioned to said floor covering, said cavity having inlet and outlet conduits connected thereto, said outlet conduit having a lower pressure than said inlet conduit,

a rotatable generally cylindrical beating means mounted between opposite end wall portions of said housing, said beating means protruding from said opening for contacting said floor covering, said beating means includes a plurality of transverse alternate rows of arcuate finger like straps and broom-like wipers for striking the surface to be cleaned,

a power means connected to said rotatable beating means for moving said beating means about a generally horizontal axis,

a dirt collecting means partially filled with liquid, said collecting means having an inlet conduit connected to said housing outlet conduit and an outlet conduit connected to a low pressure suction of said pressure producing means, a higher pressure discharge of said pressure producing means connected to said housing inlet conduit,

a cleaning solution holding means mounted in connectable contact with said housing inlet conduit for storing a cleaning solution to be foamed and used on said floor covering, directing said foam through said inlet conduit into said housing for removal of surface dirt, and

a cleaning solution dispensing and foaming means fluidly

connected to said cleaning solution holding means for discharging cleaning solution into said housing inlet conduit for foaming for discharge of foam upon said floor covering to be cleaned.

4,250,593

CASTER WHEEL FOR A CARRYING APPARATUS SUCH AS A SHOPPING CART AND THE LIKE

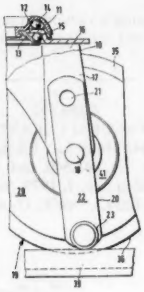
Herbert Sachser, Wermelskirchen, Fed. Rep. of Germany, assignor to Albert Schulte Söhne KG, Wermelskirchen, Fed. Rep. of Germany

Filed Dec. 6, 1979, Ser. No. 101,055

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1979, 2910555

Int. Cl.[3] **A47B** *91/00;* **B60T** *1/14*

U.S. Cl. 16—45 **8 Claims**



1. A caster wheel for a transportation apparatus of the type which is adapted for being advanced on a sloping conveyor belt having longitudinally connected guiding grooves and ribs on its upper surface, the caster wheel comprising: a swivel housing; a shaft attached to said housing; two wheel discs slidably connected on their peripheries to form a single wheel unit and each wheel disc being separately supported for rotation about the shaft; and a braking bracket attached to said housing and extending downwardly slightly short of the circumferential level of said wheel disc to abut against the ribs of said conveyor belt when said discs enter into said guiding grooves.

4,250,594

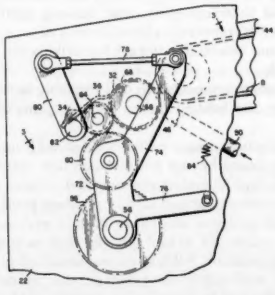
FISH SKINNING MACHINE

Ronald A. Mitchell, 887 Wesson Ave., Quincy, Mass. 02169

Filed Apr. 27, 1979, Ser. No. 33,959

Int. Cl.[3] **A22C** *25/17*

U.S. Cl. 17—62 **20 Claims**



1. In a fish skinning machine, a reciprocal knife, a feed roll and a pinch roll, said feed roll and pinch roll being arranged to receive the tail end of a fish and pull it downwardly against the knife to split the flesh from the skin, kinematic means for driving the feed roll and pinch roll and for effecting reciprocation of the knife, conveyor means for delivering the fish skin side down and tail first to the upper surface of the feed roll for downward movement thereon into the nip between the feed roll and the pinch roll, means for driving the conveyor means independently of said kinematic means, means associated with said kinematic means operative when the tail of the fish enters the nip between the feed roll and pinch roll to effect movement of the cutting edge of the knife from a remote position into engagement with the flesh side of the fish as the tail is pulled downwardly by the feed and pinch rolls, and means situated below the feed roll and conveyor in a position to discharge jets of fluid upwardly between the feed roll and the conveyor means against the underside of the fish as it travels from the discharge end of the conveyor means onto the surface of the feed roll to support the tail end of the fish as it travels across the gap from the underside of the conveyor means to the upper side of the feed roll.

4,250,595

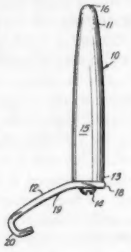
TOOL FOR OPENING AND CLOSING SKI BOOTS

Charles E. Byrnes, 118 E. 19th St., New York, N.Y. 10003

Filed Apr. 30, 1979, Ser. No. 34,945

Int. Cl.[3] **A43C** *11/00;* **A43D** *5/00;* **B67B** *7/00*

U.S. Cl. 24—71.3 **1 Claim**



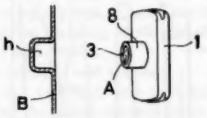
1. An improved tool for use in conjunction with a ski boot buckle assembly, said assembly including a clamping loop pivotally secured to a first portion of a ski boot, and an elongated tension lever having first and second end portions and top and bottom portions with said first end pivotally secured to a second portion of the ski boot, the clamping loop being insertable in one of a plurality of transverse grooves formed in the bottom portion of the tension lever, thereby to effect boot closure upon rotation of said tension lever away from said ski boot first portion, and open said boot upon rotation of said tension lever in an opposite direction, the improvement comprising: a handle member having a principal longitudinal axis and first and second ends, and an elongated hook member of generally planar configuration having a principal axis and first and second ends, said first end being attached to said first end of said handle member to form a right angle with the principal axis thereof, said hook member having a medially disposed portion of length which corresponds to that of the top portion of said lever, said second end of said hook member curving through substantially 180 degrees; said lever being selectively engageable with said first and second ends of said lever whereby said handle member may be manipulated laterally of said access thereof to open and close said boot.

4,250,596

FASTENING SYSTEM FOR SECURING A TRIM-FIXING DEVICE TO A SUBSTRATE

Kunio Hara, Kawasaki; Osamu Kitamura, Toyota, and Katsuji Yamaguchi, Hiratsuka, all of Japan, assignors to Nifco, Inc., Yokohama, Japan

Continuation of Ser. No. 949,309, Oct. 6, 1978, abandoned. This application Nov. 19, 1979, Ser. No. 95,686
Int. Cl.[3] A44B *21/00*
U.S. Cl. 24—73 HS 8 Claims



1. A fastening system for securing a trim-fixing device to a substrate, the substrate including a cavity and the trim-fixing device including an interfitting protuberance, the protuberance including a recess carrying thermosetting adhesive wherein upon application of heat to the adhesive the device is bonded to the substrate while the protuberance and cavity provide a mechanical resistance to lateral forces on the device.

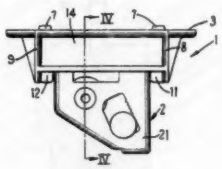
4. A fastening system for securing a trim-fixing device to a substrate, the trim-fixing device including a peripherally closed recess filled with a thermosetting adhesive, the opening of the recess carrying the thermosetting adhesive being superimposed over a portion of the substrate surface so as to be bonded thereto, means to temporarily secure the device to the substrate prior to curing the adhesive, the device further including seal means disposed radially outwardly from the closed recess to prevent the adhesive from flowing outwardly from the bonded surface created between the device and the substrate.

4,250,597

CORD GUIDE AND SUPPORT THEREFOR

James A. Ford, and Steven R. Haarer, both of Sherman Township, St. Joseph County, Mich., assignors to Kirsch Company, Sturgis, Mich.

Continuation of Ser. No. 953,409, Oct. 23, 1978. This application Nov. 7, 1979, Ser. No. 92,133
Int. Cl.[3] F16G *11/04*
U.S. Cl. 24—132 R 17 Claims



1. In a cord guide support for a liftable shade, said cord guide support having a mounting surface and being articulated about a first axis parallel with said mounting surface, the combination comprising:

hanger means having a housing receiving opening therein and including means projecting into said opening from opposite sides thereof defining a pair of arcuate upwardly facing first surfaces;

cord guide housing means defining a cord guide surface and having a first opening for introducing a cord to said cord guide surface and a second opening for leading a cord out of said housing means away from said cord guide surface and means projecting from opposite ends of said cord guide housing means defining a pair of arcuate downwardly facing second surfaces, said second surfaces having at least substantially the same radius of curvature as, and being engageable with, said first surfaces;

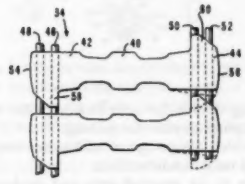
said housing means being movable through said housing receiving opening whereby said second surfaces will engage and be supported upon said first surfaces for pivotal movement of said housing means relative to said hanger means about said first axis.

4,250,598

WOVEN SLIDE FASTENER STRINGER WITH MOLDED FASTENING ELEMENTS

George B. Moertel, Conneautville, Pa., assignor to Textron Inc., Providence, R.I.

Filed Sep. 10, 1979, Ser. No. 73,963
Int. Cl.[3] A44B *19/34*
U.S. Cl. 24—205.16 R 6 Claims



1. A woven stringer for a slide fastener comprising

a plurality of spaced parallel connecting threads,

a plurality of spaced polymer coupling elements each including a head portion and a pair of leg portions extending in generally the same direction from opposite sides of the head portion,

said pair of leg portions of each coupling element having respective heels,

said pairs of leg portions of the plurality of coupling elements being molded transversely on the respective connecting threads whereby said connecting threads and said coupling elements form a train of coupling elements,

said coupling elements each having a plurality of integral reinforcing projections molded to respective upper threads of said plurality of connecting threads and extending from the respective leg portions along the respective upper threads,

said reinforcing projections only extending partially across spaces between adjacent pairs of the coupling elements leaving sections of said connecting threads free between each pair of adjacent coupling elements,

a woven tape having a plurality of warp threads and a weft thread interwoven with the warp threads,

said weft thread including a plurality of loops of the weft thread on one edge of the tape extending around the connecting threads and the reinforcing projections between each respective adjacent pair of coupling elements to secure the train of coupling elements on the tape,

said reinforcing projections each having an upper shelf which is disposed intermediate the respective head portion and the respective heel and which is disposed at a height about equal to a height of the respective upper connecting thread,

each upper shelf engaging and supporting at least one of the plurality of loops between each respective adjacent pair of coupling elements,

said reinforcing projections each having a lower surface which extends obliquely to the connecting threads, and

each lower surface extending from a bottom portion of the respective leg portion upwardly and outwardly from the leg portion to an upper outer portion of the reinforcing projection.

4,250,599

CONNECTOR

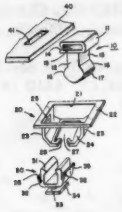
Tsuneyasu Nagashima, Kamakurashi, and Kazunori Machida, Yokohama, both of Japan, assignors to Kasai Kogyo Kabushiki Kaisha, Tokyo and Kato Hatsujo Kabushiki Kaisha, Yokohama, both of, Japan

Filed Mar. 12, 1980, Ser. No. 129,634

Claims priority, application Japan, Apr. 11, 1979, 54-48105[U]

Int. Cl.[3] **A44B** *17/00, 19/00;* **E05C** *9/00*

U.S. Cl. 24—216 **4 Claims**



1. A coupling device for coupling together a plurality of plates, said coupling device comprising:

a push pin which clasps one of said plates and which has a leg formed on its undersurface;

a carrier box to be inserted into and anchored to a slot formed in another of said plates having a slide slot formed in an undersurface thereof; and

an engaging base to be loosely inserted into said slide slot of said carrier box so that said engaging base is free to move in a horizontal plane, said engaging base comprising arms formed on its upper surface which resiliently clasp said leg of said push pin.

4,250,600

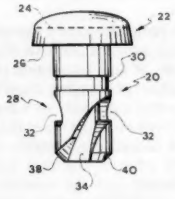
SLOTTED FASTENER

Conrad J. Gunther, Uniondale, N.Y., assignor to Dzus Fastener Co., Inc., West Islip, N.Y.

Filed Nov. 29, 1978, Ser. No. 964,451

Int. Cl.[3] **A44B** *17/00*

U.S. Cl. 24—221 A **1 Claim**



1. A fastener comprising an enlarged head portion and a reduced diameter shank portion extending from one end of the head, a cam slot formed in the end of the shank distal from the head portion, the cam slot having a spiral configuration, the end portion of the slot being widened the full width of the slot to facilitate coupling and uncoupling of the fastener with a cam follower introduced to the slot for forming a fastener assembly, the widened end portion of the slot being formed by an arcuate surface at an angle to the radius of curvature of the spiral cam slot directed away from the slot so as to provide a wider opening at the end of the slot than the remainder thereof, the widened end portion being formed by relieving the backside of the cam slot surface at the entrance end portion thereof, and the tip of the shank distal from the head portion being provided with an inward chamfer about its peripheral surface to cooperate with the widened end portion in facilitating coupling of the fastener with a receptacle to form the fastener assembly.

4,250,601

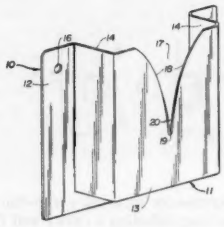
PLASTIC SHEET SUPPORT CLIP

Stanley R. Ward, 2356 Brentnell, Columbus, Ohio 43211

Filed Jul. 5, 1979, Ser. No. 55,057

Int. Cl.[3] **A44B** *21/00*

U.S. Cl. 24—264 **8 Claims**



1. A plastic sheet support clip comprising an open-topped, channel-form retainer and a mounting flange that is connected with said retainer in structurally rigid relationship, said channel-form retainer having a relatively thin front wall provided with a V-shaped notch opening at the top of the retainer for receiving a gathered-together marginal edge portion of a plastic sheet therein and initially retaining such plastic sheet in suspended relationship, said notch having the side edges thereof inwardly convergent toward the lower closed end to sufficiently decrease the spacing therebetween so as to enable the side edges to perform severing of a plastic sheet when such sheet is pulled toward the notch's vertex by a force substantially greater than the suspended weight of such plastic sheet.

4,250,602

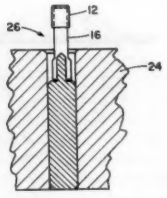
METHOD FOR MATING TELEVISION CRT CATHODE COMPONENTS

Janice L. Wichmann, Park Ridge Township, Cook County, Ill., assignor to Zenith Radio Corporation, Glenview, Ill.

Continuation-in-part of Ser. No. 35,885, Apr. 4, 1979, abandoned. This application Aug. 10, 1979, Ser. No. 65,481

Int. Cl.[3] **H01J** *9/02*

U.S. Cl. 29—25.14 **1 Claim**



1. A method for mating production quantities of the tubular caps and shanks of the cathode assemblies of the TV CRT electron guns, each of said shanks having a base end larger in outside diameter than said cap, and a narrow end adapted to fit into said cap, the method comprising:

depositing a quantity of said caps onto a first shaker plate having a plurality of receptacles adapted to receive said caps open-end-down, by positioning in each receptacle a pin smaller in diameter than the opening in said caps and concentric with the axis of the said receptacle, said pin being effective to prevent the closed-end-down entry of said caps into said receptacle;

shaking said first shaker plate to cause said caps to fall open-

end-down into said receptacles, and removing any excess of said caps;

positioning contiguous to said first shaker plate a second shaker plate having receptacles matching in number, location and alignment the receptacles of said first shaker plate, and inverting said plates in conjunctive alignment, causing said caps to fall open-end-up into the receptacles of said second shaker plate;

removing said first shaker plate and depositing a quantity of said shanks onto said second shaker plate and shaking said second shaker plate, causing said shanks to fall narrow-end-down into said receptacles and into said caps, said receptacles being adapted to reject the larger end of said shanks by virtue of being smaller in diameter than the larger end of said shanks;

removing any excess of said shanks;

repositioning and inverting said first and second shaker plates, causing the mated cap-and-shank assemblies to fall shank-end-down into said receptacles and onto said pins of said first shaker plate, and removing said second shaker plate, said first shaker plate holding said assemblies cap-end-up for further processing.

4,250,603

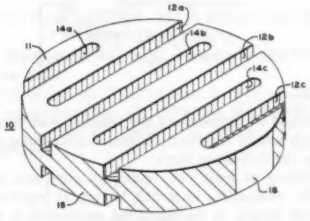
METHOD OF MAKING ELECTRODED WAFER FOR ELECTRO-OPTIC DEVICES

Victor Luft, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 865,822, Dec. 30, 1977, Pat. No. 4,166,230. This application Apr. 30, 1979, Ser. No. 34,519

Int. Cl.³ H01L *41/22*

U.S. Cl. 29—25.35 **8 Claims**



1. A method of manufacturing an electroded wafer for use in electro-optic devices, comprising the steps of:

cutting a plurality of parallel slots in at least one face of a ceramic wafer having piezoelectric properties and having faces substantially larger than its thickness, said slots forming an interdigital matrix wherein adjacent slots are cut through the periphery of the wafer in opposing direction;

contacting said slotted wafer with a palladium catalyzing compound;

removing said catalyzing compound from the faces of said wafer; and

plating at least one metal on said wafer by electroless plating such that said metal adheres to said wafer on that portion of said wafer having the catalizing compound present.

4,250,604

PROCESS FOR THE PRODUCTION OF ELECTRIC STACKED CAPACITORS

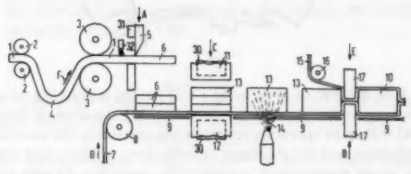
Ferdinand Utner; Harald Vetter, both of Regensburg, Fed. Rep. of Germany, and Gerhart Vilsmeier, Glendale, Ariz., assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 19, 1978, Ser. No. 971,008

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758913

Int. Cl.³ H01G *4/30*

U.S. Cl. 29—25.42 **14 Claims**



1. A process for the production of electric stacked capacitors having at least one metallized synthetic band of a width which is a multiple of the width of the to-be-formed stacked capacitor, the band being folded into a folded track in its longitudinal direction, the folded track having a least two capacitor coatings and an intermediate dielectric, comprising the steps of: providing said folded track with fewer layers than is required in the to-be-formed stacked capacitor, cutting the folded track into track segments which are of the length of the to-be-formed capacitor, stacking a plurality of said track segments on top of each other, bonding the resulting stack, and frontally contacting said hardened stack.

4,250,605

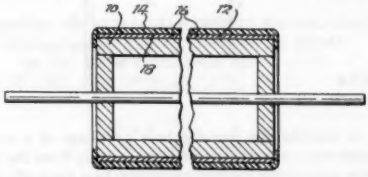
BIAXIALLY STRESSED FLUORINATED POLYMER ROLL COVER AND METHOD FOR MAKING SAME

Harry S. Chapman, Hickory, Pa., assignor to The Carborundum Company, Niagara Falls, N.Y.

Filed Jan. 19, 1978, Ser. No. 870,771

Int. Cl.³ B21B *31/08*; B60B *5/00*; B32B *31/00*; B29C *27/00*

U.S. Cl. 29—132 **28 Claims**



1. A process roller cylinder having its lateral area covered with a biaxially heat shrunken fluorinated polymer sleeve wherein said sleeve retains at least 3 percent residual biaxial stress.

8. A method for covering the lateral area of a process roller with a fluorinated polymer sleeve which comprises:

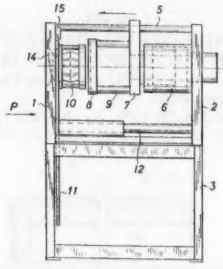
(a) placing a biaxially heat shrinkable fluorinated polymer sleeve over the lateral area of the roller; and

(b) biaxially shrinking said sleeve into a tight fitting relationship with the lateral area of the roller by applying heat to the sleeve, said sleeve retaining at least three percent residual biaxial stress after shrinking into said tight fitting relationship.

4,250,606
METHOD OF PROCESSING ROLL
Itsuo Korenaga, Kitakyushu, Japan, assignor to Hitachi Metals, Ltd., Japan
Filed Dec. 20, 1979, Ser. No. 105,621
Claims priority, application Japan, Dec. 27, 1978, 53-161356
Int. Cl.[3] B29C *17/08;* B21K *1/00*
U.S. Cl. 29—148.5 D 2 Claims

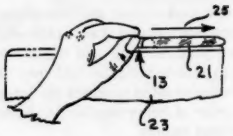
1. A method of processing a roll having a plurality of axial bores in its peripheral portion: comprising the steps of: heating said roll up to operating temperature; measuring the amount of deflection and the direction of deflection; cooling said roll to the room temperature; mechanically imparting to said roll a deflection of the same amount and direction as those measured with the heated roll; and then processing the roll in the deflected state into a true cylindrical form.

4,250,607
MACHINE FOR PRESSING HOSE COUPLINGS ONTO HOSES
Jorma Lillbacka, and Esa Rintala, both of SF-62300 HärmäSuomi, Finland
Filed Sep. 7, 1978, Ser. No. 940,206
Claims priority, application Finland, Sep. 7, 1977, 772651
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—237 6 Claims



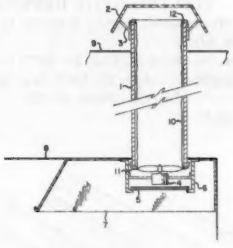
1. A machine for pressing hose couplings of a workable material onto ends of pressure hoses radially from the circumference toward the center comprising, two vertically extending end supports connected to each other by at least one horizontal bar, a supporting beam connecting the end supports at their upper edges, a revolving disk attached to one end support and having having adjacent thereto toward the second end support a cam actuated pressing tool, said revolving disk having a plurality of openings for receiving different size pressing tools, said revolving disk being supported on a rotational shaft extending between and attached to the end supports, a pressing means including a thrust plate, push plate and hydraulic cylinder in alignment with the pressing tool and extending through a hole in the second end support, said pressing means slidably connected to said support bar, and a hydraulic driving gear operatively attached to said pressing means, said gear being powered by electricity.

4,250,608
LABEL INSERT AID
Donna J. Mulkey, 5741 Sunset Rd., Fort Worth, Tex. 76114
Filed Mar. 5, 1979, Ser. No. 17,622
Int. Cl.[3] B25B *27/14*
U.S. Cl. 29—278 3 Claims



1. A label insert aid for facilitating the insertion of a label into a label holder on a file folder, said aid comprising a handle, a pair of thin, flat, elongated juxtaposed blades extending outwardly from said handle, said blades being normally held in a closed together relationship by spring action, and a label held between said blades which remains in position in the aid during insertion into the label holder and allows the aid to be withdrawn while the label is held in position in the label holder thereby allowing the label to be quickly and easily inserted into the label holder without bending and damaging the label.

4,250,609
FLUE STACK MAINTENANCE SYSTEM UTILIZING REPLACEABLE LINERS
Jimmy A. Beaudoin, 7019 Crowder Blvd. Apt. 140, New Orleans, La. 70126
Filed Jul. 31, 1979, Ser. No. 82,287
Int. Cl.[3] B23P *17/00;* F23J *11/00;* F24C *15/14*
U.S. Cl. 29—421 R 16 Claims



1. A method of maintaining the interior wall surfaces of a flue through which for example grease-containing air passes, comprising the following steps:

(a) providing at least one relatively compact, elongated, flexible, expandible liner bag having at least one closed end and having in its expanded disposition a horizontal cross-sectional dimension at least as great as that of the flue;

(b) inserting the bag in its compact disposition into the flue so that its elongated dimension longitudinally extends along the length of the flue;

(c) applying air pressure in excess of the ambient into the interior of the bag and thereby ballooning it out against the interior surfaces of the flue to form a lining of the bag material on said interior surfaces;

(d) opening the closed end of the liner bag;

(e) attaching at least the lower end of the expanded liner bag to keep the liner in position during use; and

(f) in due course, when said liner becomes coated, damaged, etc., or when otherwise desired, removing the used liner and replacing it with another by repeating steps "a" through "e" supra with another liner bag; thereby main-

taining the interior wall surfaces of the flue from becoming excessively grease coated without the necessity of manual or machine cleaning of said interior wall surfaces.

4,250,610

CASTING DENSIFICATION METHOD

Lawrence G. Wilbers, Cincinnati, and Wilbur H. Schweikert, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Jan. 2, 1979, Ser. No. 54
Int. Cl.³ B23P *17/00*; B22D *11/126*
U.S. Cl. 29—424 **3 Claims**

1. In a hot isostatic pressure (HIP) method for densification of a metal casting which includes surface-connected discontinuities, wherein a coating is applied to a surface of the casting to bridge surface openings associated with the discontinuities and then the casting is subjected to a combination of a selected processing temperature and isostatic pressure to densify the casting, the improvement comprising:

applying the coating in the form of a ceramic material selected to provide, at a glazing temperature less than the selected processing temperature in the HIP densification, a non-metallic amorphous, substantially gas impervious ceramic coating having a coefficient of thermal expansion matched in the temperature range of from ambient temperature to the selected densification processing temperature with the coefficient of thermal expansion of the casting surface to which it is applied, the coating having the property of being viscous at the selected densification processing temperature and having its bond with the casting surface degrade during the HIP densification;

heating the casting surface and ceramic material at the glazing temperature to vitrify the ceramic material into the ceramic coating without providing a significantly strong bond with the casting surface;

cooling the coated casing;

subjecting the coated casting surfaces to the combination of the selected processing temperature and isostatic pressure to densify the coated portion of the casting and to degrade the bond between the ceramic coating and the casting surface;

cooling the casting; and then

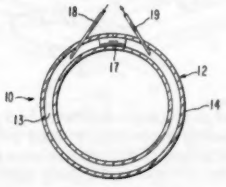
removing the coating from the casting surface.

4,250,611

PROCESS FOR MAKING DRUG DELIVERY DEVICE WITH RESERVOIR

Patrick S. Wong, Palo Alto, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Continuation of Ser. No. 775,718, Mar. 3, 1977, abandoned. This application Apr. 19, 1979, Ser. No. 31,498
Int. Cl.³ B23P *3/00, 19/04*
U.S. Cl. 29—460 **10 Claims**



1. A process for manufacturing a device for delivering a drug to a biological environment, which process comprises:

(a) shaping a biocompatible tube to a shape and size adapted for placement in the environment;

(b) inserting and sealing into one end of said tube a portion of solid polymeric plug;

(c) forming a closed hollowed reservoir device by inserting and sealing the remaining portion of said plug into the other end of the tube;

(d) positioning a drug inlet in the tube closely adjacent to the plug;

(e) positioning an air outlet in the tube closely adjacent to the plug on the other side of the tube;

(f) admitting a drug formulation through the inlet while venting air from the reservoir, and continuing such admittance until the reservoir is filled with formulation and the air has been displaced through the outlet; and,

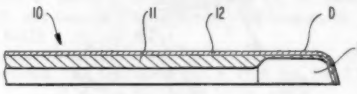
(g) removing the inlet and outlet and sealing the tube, thereby providing the device for delivering drug through the tube to the environment at a controlled rate over a prolonged period of time.

4,250,612

METHOD FOR WORKING THE END OF A SYNTHETIC RESIN MOLDING HAVING LAMINATED THEREON A METAL FOIL

Kouzi Narita, Nagoya, Japan, assignor to Inoue Gomu Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 20, 1978, Ser. No. 944,214
Claims priority, application Japan, Jul. 19, 1978, 53-8798
Int. Cl.³ B22D *11/126*
U.S. Cl. 29—527.1 **11 Claims**



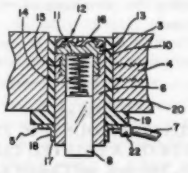
1. A method for working the end of a synthetic resin molding comprising a synthetic resin base having laminated thereon a metal foil, which method comprises partially reducing the thickness of the synthetic resin base at the end of the molding by mechanical working to form a thin portion at the end of the molding and then press molding said end into the desired shape.

4,250,613

METHOD OF ASSEMBLING A COMMUTATOR BRUSH SYSTEM

William D. Sauerwein, Joppa, and Richard E. Walton, II, Fallston, both of Md., assignors to Black & Decker Inc., Newark, Del.

Division of Ser. No. 827,144, Aug. 24, 1977, Pat. No. 4,190,781. This application Aug. 27, 1979, Ser. No. 69,643
Int. Cl.³ H01R *43/12*; H02K *15/00, 39/38*
U.S. Cl. 29—597 **6 Claims**



1. The method of assemblying a brush system in an electric motor having a substantially enclosed housing, the brush system including an annular insulating body having a conductive tubular sleeve mounted therein so as to cause a portion of the sleeve to protrude out from one end of the body, a carbon brush slideably mounted in said sleeve and electrically connected to the tubular sleeve, and a terminal for holding an

electric lead, the terminal having an uninterrupted annular portion, the method comprising the steps of:

connecting said terminal to a lead of the electric motor;

mounting said annular insulating body into said housing to cause the protruding portion of said sleeve to extend into the interior of said housing; and,

press-fitting said annular portion of said terminal over the protruding portion of said sleeve.

4,250,614

DEVICE FOR ASSEMBLING LAMINATION STACKS FOR ELECTRIC MACHINES

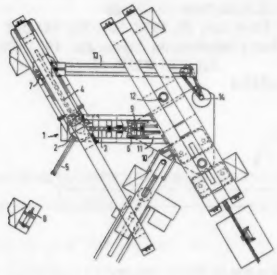
Rolf Schwab, Bischofsheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 57,020

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832209

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—732 **4 Claims**



1. In an apparatus for the assembly of lamination stacks for use in electric machines in which a first quantity of laminations is picked off, the size of the lamination stack so formed is measured at an intermediate station, and, depending upon the result of the measurement, a second quantity of laminations is taken from a magazine by a transport and pick-up device which is controlled by the measuring device, to form a final lamination stack of the desired size, the improvement comprising:

the magazine having at least three storage carriers mounted on a support at equal spacings from each other and at such an angle, with respect to the support, that laminations will be held thereon by friction;

means for picking up the first quantity of laminations from a first storage carrier and feeding it to the intermediate station;

means for picking up the second quantity of laminations from a second carrier;

means for keeping the remaining carrier loaded with new laminations; and

means for advancing all carriers by one operating station when all laminations are removed from the first carrier.

4,250,615

APPARATUS FOR MOUNTING ELECTRONIC COMPONENTS ON A PRINTED CIRCUIT BOARD

Kenneth V. Knuth, Malvern, and Charles E. Walton, II, Downingtown, both of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jun. 18, 1979, Ser. No. 49,091

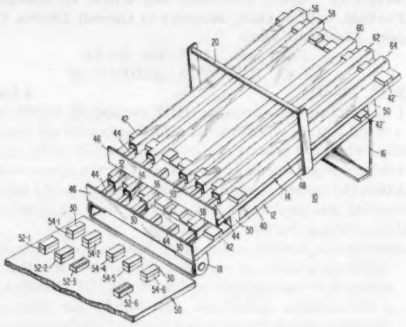
Int. Cl.³ H05K *3/30*

U.S. Cl. 29—741 **14 Claims**

1. An apparatus for dispensing components and indicating installation locations of the dispensed components on a workpiece, said workpiece including at least one row of said locations to receive said components and at least one column of said locations to receive said components, said apparatus comprising:

a plurality of storage means, each of said plurality of storage means for dispensing said components for installation in one of said rows of said locations, each of said storage means including

a platform, and



a plurality of dispensing means, coupled to the surface of said platform, each of said plurality of dispensing means for dispensing said components for installation in one column in the row of its respective storage means;

means for supporting said plurality of storage means at an acute angle with respect to a horizontal plane; and

means, connected to said plurality of storage means, said means for increasing the angle said plurality of storage means makes with respect to said horizontal plane.

4,250,616

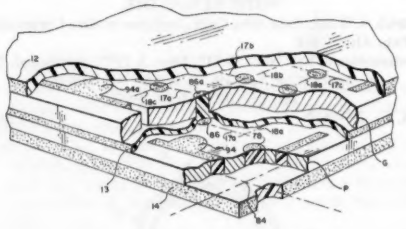
METHOD OF PRODUCING MULTILAYER BACKPLANE

John J. Klimek, Bloomingdale; Charles L. Tesch, Schaumburg; Ernest M. Feo, Roselle, and Ronald W. Lesky, Westchester, all of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed Mar. 23, 1979, Ser. No. 23,146

Int. Cl.³ H05K *3/36*

U.S. Cl. 29—830 **10 Claims**



1. A method of producing a multilayer backplane assembly of the type including a conductive metal potential plate, a conductive metal ground plate, and insulative plates between and outside of the potential and ground plates, said method comprising the steps of forming oversize potential and ground plates, forming slots along the edge portions of each of the potential and ground plates which slots separate a main body of each potential and ground plate from oversize marginal edge portions, said slots being formed in segments interrupted by webs which connect the marginal edge portions to the main body portion of each of said potential and ground plates, laminating said potential, ground and insulative plates together and filling said slots with insulative material, and trimming off said

marginal edge portions by cutting through said filled slots and severing said webs.

4,250,617

SHAVING APPARATUS

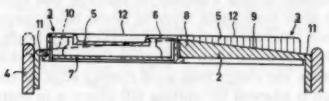
Eppe Bakker, and Pieter Riemersma, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,139

Claims priority, application Netherlands, Jan. 5, 1978, 7800121

Int. Cl.³ B26B *19/14, 19/42*

U.S. Cl. 30—34.2 **2 Claims**



1. A shaving apparatus having a holder; three cutting units arranged in a triangular pattern in said holder, each cutting unit comprising a circular shear plate provided with hair entrance apertures and a cutting member associated with and rotatable relative to the shear plate; a raised portion extending over that area of the holder situated centrally relative to the three cutting units, said portion being raised with respect to the periphery of the holder and gradually sloping downwardly towards the periphery of the holder; and a separate adjustable skin-tautening device mounted at the periphery of the holder.

4,250,618

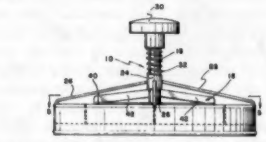
PIZZA CUTTER

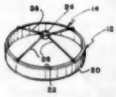
Michael D. Custer, 2317 S. Minnesota, Wichita, Kans. 67214, and Gene L. Rorabaugh, 1209 Paige 201, Wichita, Kans. 67202

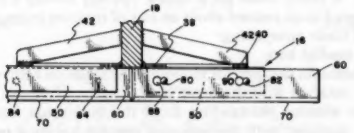
Continuation of Ser. No. 826,148, Aug. 19, 1977, abandoned. This application Dec. 10, 1979, Ser. No. 102,025

Int. Cl.³ A21C *5/08*

U.S. Cl. 30—114 **12 Claims**







1. In a cutter for pizza and the like of the type including a vertically reciprocable plunger carrying blade means at its lower end adapted to cut pizza engaged thereby on downward movement of the plunger, and improved means for supporting and guiding the plunger comprising a horizontally disposed annular member having open upper and lower ends, said annular member being adapted to be lowered into a position such that its lower end may be disposed about a pizza and to share a common support therewith, a guide means carried by the annular member for slidingly and guidingly receiving the plunger therethrough, said guide means slidingly receiving the plunger therethrough and having fixed thereto a plurality of angularly spaced and radially extending arms having extremities secured to the annular member, and means for yieldingly urging the plunger upward relative to the guide means to a limiting position, with said blade means being below the guide means and within the annular member when the plunger is in its limiting position, the arrangement being such that the annular member can be oriented relative to a pizza as desired by visually observing the latter between the arms of the guide means.

4,250,619

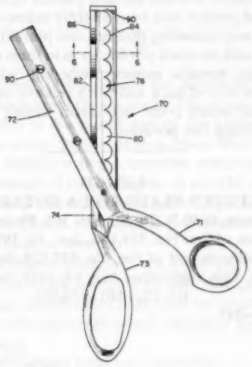
PINKING SCISSORS WITH REPLACEABLE BLADES

Antoinette P. Buerkert, 9801 Honey Cut La., St. Louis, Mo. 63119, and George T. Hughes, 2327 Ravensgate, St. Louis, Mo. 63131

Continuation-in-part of Ser. No. 851,455, Nov. 14, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 2,109

Int. Cl.³ B26B *13/10*

U.S. Cl. 30—230 **8 Claims**



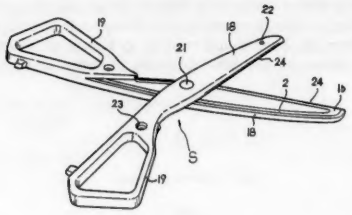
1. Pinking scissors having replaceable blades for cutting multiple designs on the edge of sheet material, said scissors comprising a pair of pivotally connected cutting blade support stems provided with handle portions, means for attaching a reversible cutting blade to each of said stems, each of said blades being comprised of a first blade member connected at right angles to a second blade member to form a reversible cutting blade, said blade being supportable upon said stem with a first one of said blades acting as a base section and being secured in flush relation to an inner surface of the stem and a second of the blades extending at right angles thereto in cutting relation with a mating reversible cutting blade supported on the other support stem, the serrated edges of the first blade members carried by each stem meshing with each other to form a first serrated design, and said blades being reversible to present the second blades in cutting relation and the first blades acting as a base and being securable on the stems to provide a different serrated cutting pattern with the second blades.

4,250,620

PLASTIC SCISSORS WITH METALLIC CUTTING INSERTS

Masatoshi Nishikawa, No. 56,, Aza-Ohira, Sanjoh, Bisai City, Aichi Prefecture,, Japan

Filed Apr. 3, 1979, Ser. No. 26,700
Claims priority, application Japan, Nov. 2, 1978, 53-135352
Int. Cl.³ B26B *13/02*
U.S. Cl. 30—254 **1 Claim**



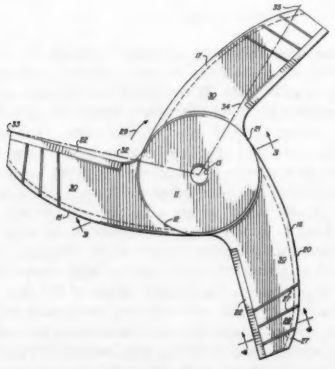
1. Safety scissors that include two elongated scissor members that are pivotally joined together at a point intermediate their ends so as to divide each scissor member into a gripping section and a cutting section, the improvement being that the cutting section of each scissor member is composed of a metallic member partially embedded in a plastic matrix, said metallic member consisting of an elongated and generally flat piece of metal that includes a recessed interior portion that is surrounded by outwardly extending generally oblong rim portion, one portion of said rim portion serving as the sharp cutting edge for each scissor member, said recessed central portion having a plurality of holes therein, plastics material both filling said recessed portion to a level slightly below the level of said rim portion and extending through said plurality of holes of the area behind said recessed portion so as to form a sturdy support for the entire metallic member, whereby when said scissor members are moved back and forth relative to each other the only portions which come into direct sliding contact are the generally oblong rim portions.

4,250,621

SAFETY CUTTER BLADE FOR A ROTARY TRIMMER

Elmer R. Houle, 6040 N. 7th St., Ste. 101, Phoenix, Ariz. 85014

Continuation of Ser. No. 919,164, Jun. 26, 1978, abandoned, Continuation-in-part of Ser. No. 833,229, Sep. 14, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 66,091
Int. Cl.³ A01D *55/00*
U.S. Cl. 30—347 **14 Claims**



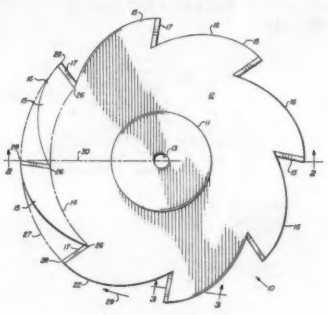
1. A safety blade for a rotary trimmer having a drive shaft adapted to be rotated about an axis of rotation in one direction, said blades comprising:
a central hub;
means on said hub for mounting the blade on a drive shaft for rotation with the drive shaft;
a plurality of cutting blades integral with said hub and extending outwardly therefrom in equally angularly spaced relation, each cutting blade having two sides and having a swept backward cutting edge formed on one side and a swept forward cutting edge on the other, said cutting edges substantially defining a cutting edge plane;
said hub and blades being formed of an elastomeric material with a layer of coarse fabric made of an organic polymer embedded in said elastomeric material and co-extensive with each blade, said layer of fabric being positioned to intersect the cutting edges of each cutting blade;
whereby when the blade is mounted on a drive shaft in one position, the swept backward cutting edge of each blade which is adapted for cutting tall plants is in cutting position and the blade applies an outwardly directed force against the plants to be cut so that the severed portions of such plants are thrown outwardly away from the drive shaft; and
when the blade is mounted in its other position, the swept forward cutting edge of each blade which is adapted to cut short grass is in cutting position.

4,250,622

SAFETY BLADE FOR A ROTARY TRIMMER

Elmer R. Houle, 6040 N. 7th St., Suite 101, Phoenix, Ariz. 85014

Continuation-in-part of Ser. No. 937,435, Aug. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 919,164, Jun. 26, 1978, abandoned, which is a continuation-in-part of Ser. No. 833,229, Sep. 14, 1977, abandoned. This application Aug. 13, 1979, Ser. No. 66,092
Int. Cl.³ A01D *55/00*
U.S. Cl. 30—347 **13 Claims**



1. A safety blade for a rotary trimmer having a drive shaft adapted to be rotated about an axis of rotation in one direction, said blade comprising:
a central hub;
means on said hub for mounting the blade on a drive shaft for rotation with the drive shaft;
an annulus outstanding from the hub made integral and coplaner with the hub, said annulus having a periphery;
a plurality of cutting teeth integral with the annulus and extending outwardly from the periphery, said teeth being equiangularly spaced, each tooth having two sides, one side having a curved swept backward cutting edge formed thereon, and the other a substantially straight cutting edge, said cutting edges substantially defining cutting edge planes; and
said hub, annulus and teeth being formed of an elastomeric

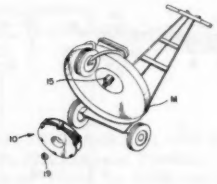
material with a layer of coarse fabric made of an organic polymer embedded in said elastomeric material, said fabric being substantially coextensive with each blade, and being positioned to intersect cutting edges of each tooth; whereby when the blade is mounted on a drive shaft of a trimmer in one position, the curved swept cutting edges of the teeth are the leading edges and apply an outwardly directed force against plants being cut so that the severed portions of such plants are forced away from the drive shaft, and when the blade is mounted in its other position, the straight cutting edges of each tooth are the leading edges which edges are adapted to cut short grass.

4,250,623

FILAMENT VEGETATION TRIMMER

Charles B. Pittinger, and Cynthia A. Pittinger, both of Rt. 1, Box 68, Weatherford, Tex. 76086

Filed Aug. 1, 1979, Ser. No. 62,750
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—347 **12 Claims**



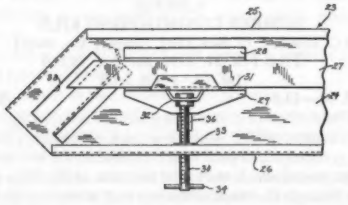
1. A vegetation cutter head assembly comprising a circular base, a plurality of upstanding post-like members circumferentially spaced on said base, a filament wound repeatedly about the outside of selected ones of said plurality of post-like members and inside of the remaining of said plurality of post-like members, a filament retainer plate positioned only over the post-like members about which said filament is wound for preventing the filament from slipping off the ends of said posts as said filament is wound about the outside of said posts, and a cover plate positioned over all of said post-like members and said retainer plate, said base plate, said filament retainer plate, and said cover plate having aligned central openings therein for receiving the end of a rotary drive shaft, said filament having a free end which projects outwardly from inside of one of said remaining post-like members, said circular base plate being formed of sheet metal and said post-like members are elongated strips stamped out of said base plate and bent substantially upright with respect to said base plate about an integral hinge line.

4,250,624

MITER TABLE FOR USE WITH A SABER SAW

Everett J. Partington, 620 S. Elizabeth, Oconomowoc, Wis. 53066

Division of Ser. No. 5,555, Jan. 22, 1979. This application Feb. 1, 1980, Ser. No. 117,776
Int. Cl.³ B27B *27/00*
U.S. Cl. 30—374 **3 Claims**



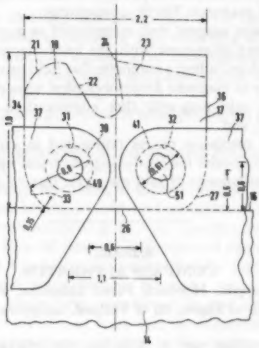
1. A miter table construction to be used with a saber saw to make an angular cut on a workpiece, comprising a base, clamping means for clamping the workpiece on one surface of the base, and guide means disposed on the opposite surface of the base for guiding a saber saw in movement in a direction at an angle to the workpiece, said base having a slot disposed parallel to said guide means to receive the reciprocating blade of the saber saw.

4,250,625

MINIATURE BLADE DEVICE

Alfred Reif, Silcherstrasse 21, 7446 Oberboihingen, Fed. Rep. of Germany

Filed Aug. 13, 1979, Ser. No. 66,185
Int. Cl.³ A61B *17/00*
U.S. Cl. 30—383 **10 Claims**



1. In a miniature blade device for motor-driven cutting instruments, which comprises a cutter bar, a sprocket wheel which is provided at the motor end of the cutter bar and is aligned with the cutter bar, an endless chain which comprises chain links and meshes with the sprocket wheel and is guided on the circumference of the cutter bar so as to be aligned with the central plane of the cutter bar, and sharpened, extremely narrow cutting elements provided on the outside of the chain links, the improvement wherein:

(a) the cutter bar is a single-piece blade having a smooth external edge which guides the chain links parallel to the central plane, which chain links slide on the external edge;

(b) apart from the sprocket wheel, no other guide wheel is provided;

(c) two types of chain links are provided:

(i) a slider having a base which slides on the external edge of the cutter bar and a lagging zone that is close to the base and is designed as an engagement surface for sprockets of the sprocket wheel, and two passage holes at right angles to the central plane, which are approximately evenly spaced from the base and are arranged so as to be close thereto,

(ii) two approximately trapezium-shaped, very thin laminae, having tapering zones which are inwardly directed, arranged on both sides of the cutter bar so as to be parallel to the central plane thereof and so as to be at a short distance from the external surfaces and having corner zones of the widening portion of the trapezium shape which cover the passage holes leaving a small clearance, and two pins which pass through the passage holes and are rigidly connected to the corner zones;

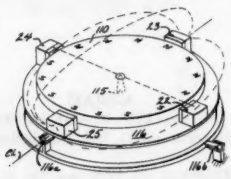
(d) the pins are connected to the corner zones of the laminae by laser welding.

4,250,626

ELECTRONIC COMPASS

Harold Lazar, 3001 Via Buena, Palos Verdes Estates, Calif. 90274

Filed Aug. 20, 1979, Ser. No. 68,194
Int. Cl.³ G01C *17/04*
U.S. Cl. 33—363 R **2 Claims**



1. A compass adapted to produce electrical signals indicative of the local magnetic North, comprising:

a permanent magnet dish magnetized as a rotor suspended for rotary alignment with the local magnetic North and said dish including a magnetic flux field proximate thereto;

a plurality of magneto diodes mounted adjacent said dish for sensing said magnetic flux alignment in the proximity thereof; and

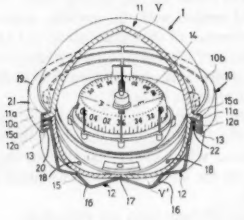
electrical resolving means connected in circuit with said magneto diodes for producing electrical signals indicative of the alignment of said magnetic flux relative said compass.

4,250,627

COMPASS APPARATUS

Kauko Järvenpää, Helsinki; Pertti Leinonen, and Jouko Räisänen, both of Espoo, all of Finland, assignors to Suunto Oy, Finland

Filed Nov. 9, 1978, Ser. No. 959,146
Claims priority, application Finland, Nov. 14, 1977, 3440/77
Int. Cl.³ G01C *17/08*
U.S. Cl. 33—364 **11 Claims**



1. Compass apparatus including a housing defining a liquid-filled sealed first interior space and a compass card member disposed within said liquid filled space for rotation therein, wherein said housing comprises:

an upper transparent cover portion having an outwardly directed first flange extending around the perimeter thereof;

a lower housing portion having an outwardly directed second flange formed of an elastic material, the upper surface of said second elastic flange being adapted to engage the lower surface of said first flange in liquid sealing engagement therewith so that said upper and lower housing portions define said sealed interior space therebetween; and

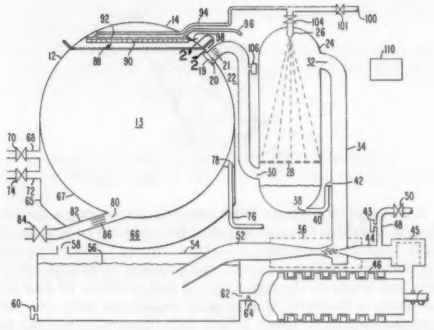
connecting ring means for sealingly engaging said upper cover portion to said lower housing portion, said connecting ring means being defined by at least two arcuate yoke members, each yoke member having a U-shaped cross section defined by upper and lower marginal flanges and a connecting web integrally formed with said upper and lower marginal flanges, the upper one of said marginal flanges abutting against the upper surface of said first flange of said upper transparent cover portion and the lower one of said marginal flanges applying a compression force to said second elastic flange to compress the same so as to simultaneously removably affix said upper cover portion and lower housing portions to each other and to effect a liquid sealing engagement therebetween.

4,250,628

MICROWAVE FABRIC DRYER METHOD AND APPARATUS

Richard D. Smith, 2415 South Ct., Palto Alto, Calif. 94301, and P. Michael Uthe, 15 Admiralty Pl., Redwood Shores, Calif. 94065

Filed Jun. 21, 1979, Ser. No. 50,821
Int. Cl.³ F26B *3/34*
U.S. Cl. 34—1 **25 Claims**



1. A microwave fabric dryer comprising:

means defining a microwave reflective drying chamber for accommodating fabrics to be dried,

means defining a vacuum chamber which includes said drying chamber within its boundaries,

microwave energy generating means including at least a solid state microwave device for production of microwave energy at a predetermined frequency,

means for directing the microwave energy into the drying chamber,

condensing means external to the drying chamber but in fluid communication therewith for condensing water vapor evolved from the drying fabric,

air pumping means external to the vacuum chamber for reducing the pressure within the vacuum chamber to a pressure below the vapor pressure of the water during the drying process, and

control means for terminating the microwave power when fabrics have reached the predetermined degree of dryness.

4,250,629

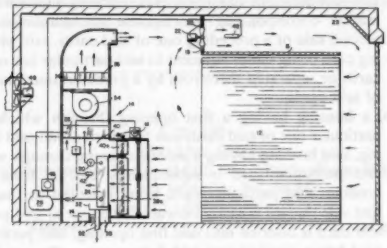
LUMBER CONDITIONING KILN

Donald C. Lewis, P.O. Box 1107, Bangor, Me. 04401

Filed Feb. 21, 1979, Ser. No. 13,059
Int. Cl.³ F26B *3/06*
U.S. Cl. 34—13.8 **15 Claims**

15. The method of conditioning lumber comprising within a closed chamber within which is a stack of lumber, circulating air in a predetermined path which commences at one end of the chamber, passes across the top of the stack to the other end and returns through the stack to the one end, at the one end inducing a portion of the air returning through the stack into a dehumidifier in a flow path over the evaporator coil and con-

trolling the flow of air entering the dehumidifier in the event that the refrigerant flowing from the evaporator to the compressor exceeds a predetermined level to bypass the air and the evaporator.



4,250,630

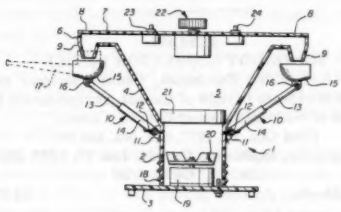
TOBACCO-PIPE HOLDER AND DRYER

Leonard L. Moses, 1212 Elmwood, Pasadena, Tex. 77502

Continuation-in-part of Ser. No. 6,094, Jan. 24, 1979. This application Dec. 28, 1979, Ser. No. 108,141

Int. Cl.[3] **F26B** *23/06*

U.S. Cl. 34—104 **8 Claims**



1. A tobacco smoking pipe holder and dryer comprising

a housing having a cylindrical base portion and and upper portion opening from said base portion, extending upward and flared outward therefrom and having around its upper periphery a plurality of downwardly directed nozzle outlets,

a plurality of radially extending support members pivotally supported on said housing and aligned with said nozzle outlets,

a cup shaped supporting member pivotally supported on the outer end of each of said support members and movable into and out of juxtaposition to said nozzle outlets for supporting a pipe bowl with a nozzle outlet positioned therein,

spring means urging each of said support members toward said nozzle outlets,

air inlet means in said housing base portion,

blower means positioned in said housing base portion,

electric heating means positioned in said housing to heat air circulated by said blower means, and

means controlling energization of said heating means and said blower means to circulate heated air to said nozzle outlets to discharge into the bowl of one or more pipes supported in said cup shaped supporting members.

4,250,631

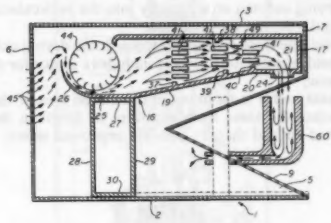
TOBACCO-PIPE HOLDER AND DRYER

Leonard Moses, 1212 Elmwood, Pasadena, Tex. 77502

Filed Jan. 24, 1979, Ser. No. 6,094

Int. Cl.[3] **F26B** *9/00*

U.S. Cl. 34—104 **8 Claims**



1. A tobacco smoking pipe holder and dryer comprising

an outer housing enclosing a pipe-receiving chamber and having an enlarged unobstructed front opening for unobstructively receiving a pipe and having other openings for admission of air thereto,

means to support a pipe with its bowl positioned upwardly in said chamber,

blower means positioned in said housing for circulating air therein,

an inner housing supported in spaced relation to said outer housing and having an inlet and an outlet end,

said outlet end comprising at least opening positioned to direct the flow of heated air downward against the interior of the bowl of a pipe supported by said supporting means in said outer chamber housing,

said blower means being positioned in said inlet end and operable to receive air from said air admission openings,

electric heating means positioned within said housing within said inner housing to heat air circulating therethrough,

switch means controlling energization of said blower means,

switch means controlling energization of said heating means and operable to energize the same only when said blower switch means is closed, and

thermostatic switch means operable to de-energize said blower means upon occurence of a predetermined temperature in said air-directing inner housing.

4,250,632

INLET DUCT FOR RECIRCULATING GRAIN DRYERS

Walter Y. Botkins; Jack D. Bussell, both of Overland Park; Nicholas B. Scott, New Strawn, and William I. Wood, Waverly, all of Kans., assignors to Berico Industries, Inc., Overland Park, Kans.

Filed May 29, 1979, Ser. No. 43,117

Int. Cl.[3] **F26B** *17/12*

U.S. Cl. 34—169 **6 Claims**

1. In a recirculating grain dryer having a drying column area, and a recirculating blower mounted in a room with an open side thereof communicating with said drying column area, the improvement comprising:

(a) an inlet duct connected with the recirculating blower and extending from the drying column area to an intake of the recirculating blower; and wherein

(b) said inlet duct has an open end thereof disposed adjacent to the open side of the room, whereby during a full recirculating condition of the grain dryer, air is drawn into the recirculating blower substantially wholly from said drying column area;

(c) said room includes a floor, a ceiling, opposed side walls, and a rear wall;

(d) said duct open end extends vertically from the floor of the room to the ceiling of the room, and horizontally from an associated side wall of the room to the recirculating

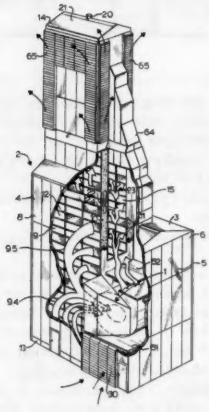
blower, thereby forming a substantially closed, dust-free area of the room disposed rearwardly of the recirculating blower;

(e) said inlet duct has an aerodynamically streamlined interior shape with walls which taper convergingly inwardly from the inlet duct open end to the recirculating blower intake for efficiently guiding the flow of air from the drying column area directly into the recirculating blower intake during recirculation;

(f) said open side is oriented toward said drying column area;

(g) said recirculating blower includes a motor for driving the same;

(h) said motor is mounted in the closed area of the room to isolate the same from exposure to debris in the recirculated air and thereby provide improved safety;



(i) said recirculating blower intake includes an upper portion and a lower portion; and

(j) said inlet duct includes;

(1) inner and outer side wall panels oriented in a substantially parallel relationship; said inner and outer duct side wall panels being positioned adjacent to said recirculating blower and an associated one of the room side walls respectively; and

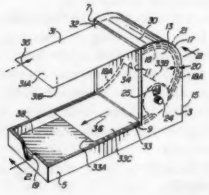
(2) top and bottom panels respectively extending from the room ceiling and floor to the upper and lower portions respectively of said recirculating blower intake; said top and bottom panels converging inwardly from the inlet duct open end to the recirculating blower intake for efficient air flow therethrough.

4,250,633

EDUCATIONAL MACHINE

Donald R. Thompson, 2628 E. Turquoise Dr., Phoenix, Ariz. 85028

Filed Mar. 12, 1979, Ser. No. 19,740
Int. Cl.³ G09B 3/00
U.S. Cl. 434—327 **12 Claims**



1. An educational system comprising in combination:

(a) a deck of cards arranged in a predetermined sequence, each of said cards having a first side with an item of information thereon and a second side with another item of information thereon, the information on the first side of any particular one of said cards comprising question information corresponding to response information on the second side of a preceding one of said cards, said preceding card being either adjacent to said particular one of said cards or separated therefrom by a predetermined number of said cards;

(b) a housing having a first opening through which said particular one of said cards can be inserted into said housing, said housing having a second opening through which said particular card is subsequently ejected from said housing, said particular card being oriented so that the first side thereof is easily viewable by a user as said particular card is inserted into said first opening, said particular card being inserted into said first opening after said preceding can is, inserted into said first opening;

(c) inverting means in said housing for inverting said preceding card within said housing after said first card is inserted through said first opening into said housing; and

(d) ejecting means for receiving said preceding card from said inverting means and responding to insertion of said particular card through said first opening to partially eject said preceding card from said housing, said information on the second side of said inverted, partially ejected preceding card not being visible to the user until the user grasps an edge of said inverted, partially ejected preceding card and pulls it out of said second opening,

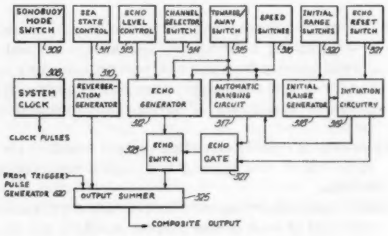
said inverting means and said ejecting means operating to cause a substantial amount of delay between the time at which said preceding card is inserted into said first opening and at the time at which said preceding card is removed from said second opening to expose the information on the second side of said preceding card to the user.

4,250,634

SONOBUOY SIMULATOR DEVICE

Lawrence A. Buckler, Dartmouth, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Oct. 18, 1977, Ser. No. 844,507
Claims priority, application Canada, Jun. 17, 1977, 280743
Int. Cl.³ G09B 9/00
U.S. Cl. 434—6 **13 Claims**



1. A sonobuoy signal simulator comprising:

means for producing a train of simulated reverberation signals;

means for setting representative range, speed, and direction signals for a target,

means responsive to said range, speed and direction signals for providing a train of simulated echo pulses each echo pulse being respectively associated with a reverberation signal in said train of reverberation signals;

means responsive to said speed and direction signals for automatically and uniformly varying the time between the start of a reverberation signal of said train of reverberation

signals and the start of an associated echo pulse of said train of echo pulses as succeeding sets of a reverberation signal and an associated echo pulses occur; and,

summing means for combining said train of reverberation signals and said train of echo pulses.

4,250,635

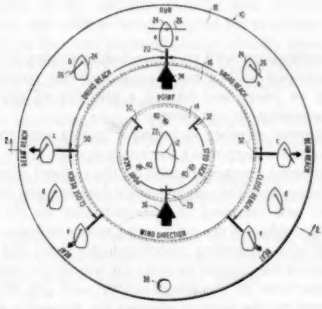
SAILING AID

Robert Princevalle, 28 Laurel Hill Dr., Niantic, Conn. 06357

Filed Jul. 11, 1979, Ser. No. 56,573

Int. Cl.[3] G09B 9/06

U.S. Cl. 434—60 **7 Claims**



1. A sailing aid for determining the correct trim of a sailboat for various wind directions relative to the heading of the sailboat, and comprising:

a first disk having an outer periphery containing a plurality of angularly displaced symbols representing various sail trims from RUN to BEAT, and having a central portion containing first index means representing the heading of the sailboat;

second index means representing wind direction; and

mechanical means for mounting said second index means for rotation about an axis passing through the center of said first disk, whereby, when said first index means is set to be aligned with the heading of the sailboat and said second index means is set by rotation to be aligned with the wind direction, said second index means indicates on said outer periphery of said first disk the correct trim condition for the set heading and wind direction.

4,250,636

YOKE ASSEMBLY FOR FLIGHT SIMULATOR

Joshua Horwitz, Magnolia, Mass., assignor to Aviation Simulation Technology, Bedford, Mass.

Filed Jun. 1, 1979, Ser. No. 44,497

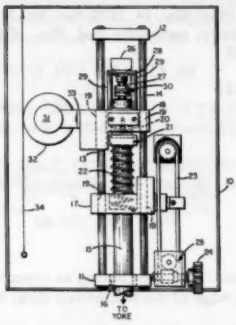
Int. Cl.[3] G09B 9/08

U.S. Cl. 434—55 **8 Claims**

1. In a flight simulator yoke assembly of the type comprising a yoke, an axially moveable rotatable yoke shaft, spring means for providing restoration forces and control signal generation means, the improvement wherein:

said spring means comprise axially moveable spring means and axially adjustable spring means;

said yoke shaft is rotationally coupled to said axially moveable spring means to simulate the rotational restoration force on an aircraft yoke and is axially coupled to said axially adjustable spring means to simulate the axial restoration force on an aircraft yoke; and



adjustment means are provided for adjusting the axial position of said axially adjustable spring means to simulate the effect of trim adjustment of an aircraft.

4,250,637

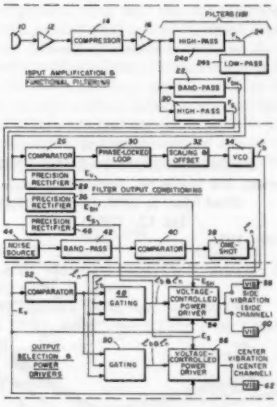
TACTILE AID TO SPEECH RECEPTION

Brian L. Scott, Denton, Tex., assignor to Scott Instruments Company, Denton, Tex.

Filed Jun. 13, 1979, Ser. No. 48,237

Int. Cl.[3] G09B 21/00

U.S. Cl. 434—114 **17 Claims**



1. A tactile aid for persons having a hearing impairment, comprising:

a filter array responsive to an acoustic signal and having a high pass channel, a low pass channel and a midfrequency channel with each providing an output frequency,

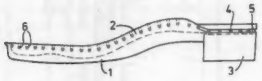
means for modulating a random frequency signal by the output of the high pass channel to generate a high pass modulated signal, and for modulating the random frequency signal by the output of the midfrequency channel to generate a midfrequency modulated signal, and

vibrating means responsive to the high pass modulated signal and the output of the low pass channel to produce a vibrating motion, and including means responsive to the midfrequency modulated signal and the output of the low pass channel to produce a second vibrating motion.

4,250,638
THREAD LASTED SHOES

Friedrich Linnemann, Lerchenweg 5, 4019 Monheim, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,319
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1978, 2829645
Int. Cl.[3] A43B 3/14, 9/10
U.S. Cl. 36—11 6 Claims



1. In a thread-lasted shoe having an upper which is stitched to a stitching edge of the sole of said shoe, the improvement comprising:

two different stitching means, defined between said shoe upper and said shoe sole and confined to predetermined separate portions of said shoe, for securing said shoe upper to said shoe sole,

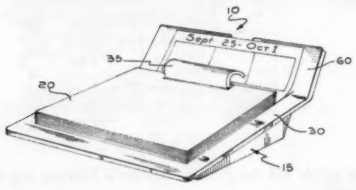
a first one of said two stitching means being defined by stitching holes defined solely within a plane substantially parallel to the plane of said shoe sole and being confined solely within the heel portion of said shoe, and

a second one of said two stitching means being defined by stitching holes defined solely within planes inclined at a predetermined angle with respect to said plane of said shoe sole and being confined solely within those portions of said shoe other than said heel portion of said shoe.

4,250,639
MEMORANDUM PAD-CALENDAR

Kent Tarrant, 210 Maple St., Springfield, Mass. 01105

Filed Mar. 5, 1979, Ser. No. 17,488
Int. Cl.[3] G09D 3/00
U.S. Cl. 40—107 15 Claims

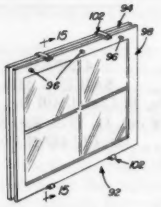


1. Memorandum pad-calendar comprising a base having a portion adapted to support a multiplicity of memoranda sheets thereon; binding means passing through an aperture in each of the sheets for releasably retaining said sheets on said sheet support portion such that the sheets are individually and sequentially removable from said sheet support portion by overturning the sheets; and a sheet receiving means disposed adjacent said sheet support portion such that said sheets, when released from said binding means, drop into said receiving means, portions of the overturned sheets being visible simultaneously with the sheets remaining on said sheet support portion.

4,250,640
PICTURE FRAMES

Vernon C. Culhane, 2729 County Rd. 228, Durango, Colo. 81301

Filed Jul. 25, 1978, Ser. No. 927,874
Int. Cl.[3] G09F 1/12
U.S. Cl. 40—155 1 Claim



1. In combination with an image-holder having at least one pocket provided with a transparent wall for receiving and displaying an image and having a plurality of apertures, a frame, comprising, in combination:

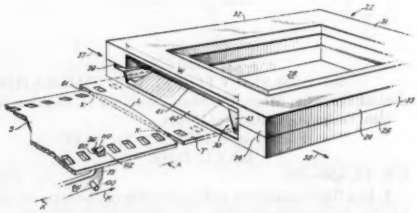
(a) a support member including a planar support surface arranged for supporting the image-holder; and

(b) positioning means provided on the support member and extending from the planar surface for engaging the image-holder and retaining the image-holder on the support member, wherein the positioning means includes a plurality of pins projecting codirectionally from the support surface of the support member for retainingly engaging in the apertures of the image-holder; and gripping means mounted on the support member for releasably engaging the image-holder along a peripheral edge thereof and retaining the image-holder on the support member, wherein said gripping means includes a cover provided with openings for receiving said pins and a plurality of resilient clamps releasably holding said cover against said image-holder, said resilient clamps being attached to the periphery of said support surface and engaging the periphery of said cover, and wherein said cover has an open center area for exposing said image-holder.

4,250,641
PRE-CLOSED SLIDE MOUNT

Edwin R. Thompson, Stamford, Conn., assignor to Forox Corporation, Stamford, Conn.

Filed Oct. 18, 1978, Ser. No. 952,409
Int. Cl.[3] A47G 1/06; G09F 1/10
U.S. Cl. 40—158 B 18 Claims



1. A pre-closed slide mount of rectangular configuration for receiving and holding a rectangular film transparency comprising:

a first and second rectangular mask secured together in face-to-face relationship for defining an internal pocket in which a rectangular film transparency is held, said pocket

having a width as measured in the plane in which the transparency is held which is very slightly wider than the width of the transparency as measured in said plane;

said masks having registering windows for viewing the transparency held in said pocket;

the portions of said first and second masks extending along one edge of the mount defining an entrance between them leading into said pocket;

said portion of said first mask including an elevated border region adjacent to said entrance, said elevated border extending along said portion of said first mask near said one edge for a distance less than said width of the pocket;

said elevated border region having a sloping outer surface adjacent to said one edge to provide a funnel for directing a transparency between said portions of said first and second masks;

said portion of said first mask defining a pair of valleys adjacent to the opposite ends of said elevated border region, said valleys being adapted for receiving into said entrance the outer edges of a longitudinally bowed pusher which bows up over said elevated border region when the bowed pusher is pushing the film transparency through said entrance into said pocket;

each of said valleys being defined in part by the respective end of said elevated border region sloping laterally downwardly and outwardly;

said portion of said second mask defining an elevated roof of said entrance spaced above said elevated border region, and

said elevated roof having a pair of inverted steps at the respective ends thereof positioned over the laterally sloping ends of said elevated border region.

4,250,642

PLANNING AID

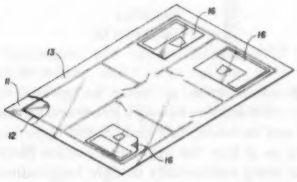
Harald Riehle, Anna-Schieber-Weg 18, 7300 Esslingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 800,597, May 25, 1977, abandoned. This application Apr. 2, 1979, Ser. No. 26,158

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1976, 2624960

Int. Cl.[3] **G09F** *7/12*

U.S. Cl. 40—160 **4 Claims**



1. A planning aid in the form of an assembly comprising, in combination,

a sheet of release paper having one surface provided with a pictorial display of an area in which planning objects are to be arranged,

a flexible soft sheet of transparent plastic material adhesively secured to said one surface of said release paper sheet in overlying relationship with said display and having a smooth upper surface and being adhesively secured to said release paper sheet in a pressure sensitive relation so that said flexible soft sheet may be removed from said release sheet and selectively adhered to another sheet of release paper,

a plurality of selectably detachably mounted plastic material having a smooth surface for permitting said elements to be detachably and removably mounted in selected positions on said smooth upper surface of said sheet of plastic material within the outline of said display to thereby symbolize objects to be disposed within the outline of said display,

the smooth adjacent surfaces of said elements and said sheet of plastic material permitting the exclusion of air therebetween for providing adhesion to detachably retain said elements in the selected positions.

4,250,643

ANIMAL IDENTIFICATION TAGS

Roderick D. Mackenzie, 1 Middle Rd., Havelock North, New Zealand

Filed Jun. 7, 1978, Ser. No. 913,607

Claims priority, application New Zealand, Jun. 9, 1977, 184356

Int. Cl.[3] **G09F** *3/00*

U.S. Cl. 40—301 **16 Claims**

1. A male identification flag member of an ear tag assembly adapted to be held in a cartridge for use with an applicator, the other part of said assembly being provided as a female locating member engagable with said male flag member, said flag member being of a generally T shape, a flag portion forming the cross-bar of the T shape, a shank extending outwardly from one edge surface of said flag portion to provide the tail of said T shape, the arrangement being such that the thickness of said flag portion and the greatest thickness of the shank measured in the same direction as the thickness of the flag portion is such that when a plurality of flag members are arranged in abutment one with the other with the flag portions face to face, the longitudinal axis of each shank is substantially parallel to each other shank, and being such that the shank and the portion of the flag portion aligned with the longitudinal axis of the shank is substantially rigid against compression along said longitudinal axis.

4,250,644

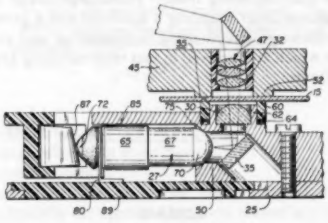
HAND HELD MICROFILM READER

Johannes K. Jantzen, Mountain View, Calif., assignor to Topex, Inc., Palo Alto, Calif.

Filed Dec. 11, 1978, Ser. No. 968,138

Int. Cl.[3] **G02B** *27/02;* **A47B** *91/00;* **F21S** *1/06;* **G03B** *21/00*

U.S. Cl. 40—367 **5 Claims**



1. A method of aligning a lens end bulb having a base and a lens for focusing an output beam with respect to a fixed structure such that the output beam is oriented in a first predetermined relationship relative to the fixed structure, comprising the steps of:

providing a clip having a reference portion, and means for engaging the base;

rigidly mounting the base to the clip so that the output beam is in a second predetermined relationship with respect to the reference portion of the clip, the clip and bulb defining an assembly; and

providing clip indexing means on the fixed structure for engaging the reference portion of the clip such that the output beam is in the first predetermined relationship with respect to the fixed structure when the clip indexing means engages the reference portion of the clip.

4,250,645

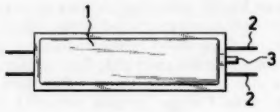
INDICATING DEVICE WITH FLAT FLUORESCENT LAMP

Kazuo Ariga, Tokyo; Norimasa Oinuma, Machida; Youichiro Akanuma, and Mitunari Yoshida, both of Tokyo, all of Japan, assignors to Stanley Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 876,315, Feb. 9, 1978, abandoned. This application May 16, 1979, Ser. No. 39,318

Int. Cl.³ G09F *13/26*

U.S. Cl. 40—545 **5 Claims**



1. A fluorescent lamp type indicating device comprising:

a flat type fluorescent lamp having opposing flat side surfaces and outer peripheral edges, and

at least one indication means formed on a side surface of said fluorescent lamp, said indication means comprising at least one indicating portion and a ground portion which occupies the area of said side surface other than said indicating portion, the colors or light transmittance of said indicating portion being different from that of said ground portion,

an ornamental frame surrounding and attached to said outer peripheral edges of said fluorescent lamp, said ornamental frame having a lamp receiving groove therein to receive in said groove said outer peripheral edges of said fluorescent lamp, and a wire receiving groove therein to receive in said wire receiving groove electrical wires running to said fluorescent lamp for energizing said fluorescent lamp, and

a mounting base attached to one side of said ornamental frame and containing therein a discharge circuit for said fluorescent lamp including a stabilizer and a glow lamp, said discharge circuit being connected to said electrical wires which are received in said wire receiving groove of said frame.

4,250,646

HIGHWAY SIGN

Samuel Z. Trachtenberg, 555 E. 9th Ave., Munhall, Pa. 15120

Filed May 21, 1979, Ser. No. 40,590

Int. Cl.³ G09F *13/16*

U.S. Cl. 40—582 **13 Claims**

1. A highway sign comprising an indicia on a color contrasting background, and a narrow strip of retro-reflecting material forming a border between said indicia and background so as to

accentuate said border at night when illuminated by headlights of an oncoming vehicle.

4,250,647

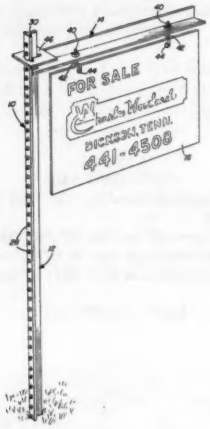
FAST MOUNT SIGN HANGER

Charles E. Woodard, P.O. Box 713, Dickson, Tenn. 37055

Filed Dec. 11, 1979, Ser. No. 102,984

Int. Cl.³ G09F *7/22*

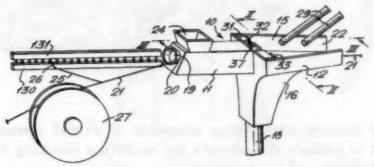
U.S. Cl. 40—617 **6 Claims**



1. A sign construction including an upright standard of non-circular cross section, having a lower end for anchoring in the ground and including first and second oppositedly facing side surfaces on at least the upper end portion thereof, one of said surfaces being substantially straight longitudinally of said standard and the other said surfaces including a plurality of abutments spaced therealong longitudinally of the standard and projecting outwardly of the other surfaces, an elongated horizontal sign panel support arm including base and free ends, said base end of said arm defining an upstanding opening formed therethrough of a cross-sectional shape corresponding to the cross-sectional shape of said standard, said upper end portion of said standard being slidably received through said opening with said free end of said arm projecting laterally outwardly from the side of said standard outwardly from which said one surface of said standard faces, said base end of said arm including an abutment surface spaced below said opening and toward said base end from the side of said opening adjacent said free end of said arm and abuttingly engagable with said one surface, the portions of said arm defining the side of said opening remote from said free end defining downwardly facing abutment surfaces for engagement with said abutments, said free end of said arm including means for sup-

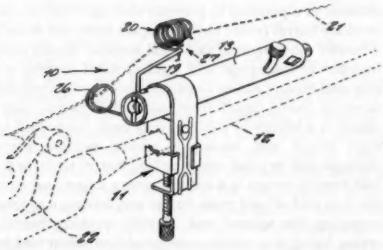
porting the upper marginal edge of the vertical sign panel therefrom.

4,250,648
APPARATUS FOR USE IN FISHING
Kevin N. Jacobsen, 39 Howth Rd., Clontarf, Dublin 3, Ireland
Filed Mar. 26, 1979, Ser. No. 24,104
Int. Cl.³ A01K *97/00*
U.S. Cl. 43—4 **10 Claims**



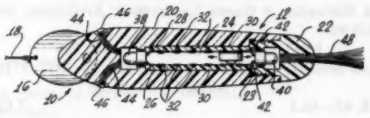
1. Apparatus for use in baiting a fishing line of the kind having longitudinally spaced apart hooks thereon, the apparatus comprising a horizontally elongated tubular enclosure member having inlet and outlet openings at opposite ends thereof and an internal through passage therebetween for passage of a line therethrough, an opening in said tubular member for feeding bait thereinto, a receptacle connected to said tubular member at the outlet end thereof, said receptacle including a longitudinally extending trough having a discharge opening at the end thereof remote from the tubular member, and a brush-assembly positioned at the outlet opening of said tubular member having flexible brush-bristles arranged to extend generally radially of said outlet opening, said brush-assembly being thus adapted to retain a mass of bait in the tubular member but to allow bait impaled by the hooks to pass freely from said outlet opening when a line with hooks thereon is drawn through the mass of bait in the tubular member, said inlet and outlet openings and the discharge opening at the end of said receptacle being so arranged relative to each other elevationally such that a fishing line passing through said tubular member and receptacle bears on the lower edges of said inlet and discharge openings and follows a rectilinear path therebetween and passes through approximately the center of said outlet opening.

4,250,649
D BITE LITE
Duane E. Harrington, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, both of N.Y. 10007
Filed Jan. 15, 1979, Ser. No. 3,637
Int. Cl.³ A01K *97/12*
U.S. Cl. 43—16 **2 Claims**



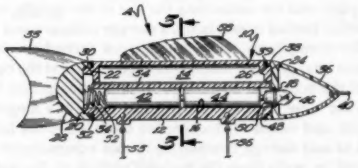
1. An accessory attached to a fishing rod, comprising in combination a clamp for grasping around said fishing rod, a case affixed to said clamp, an electric lamp and dry cell battery inside said case, and a switch on said case for closing a circuit between said lamp and battery, said switch including a pivotable lever, and an outer end of said lever including a tension coil spring loop through which a fishing line extends to a reel of said fishing rod, and said lever including means to give said line a short, quick tug when a fish nibbles on a bait so to hook the same, wherein said means includes a pivotable brace at one end of said loop, a foot on a free end of said brace for bracing against a selected turn of said loop, and a knurlled pad and jaw at one end of said loop for grasping said line therebetween.

4,250,650
INTERMITTENTLY ILLUMINATED FISHING LURE
Raoul G. Fima, 24901 Cienega La., Mission Viejo, Calif. 92675
Filed Dec. 4, 1978, Ser. No. 966,361
Int. Cl.³ A01K *75/02*
U.S. Cl. 43—17.6 **9 Claims**



1. In a fishing lure containing a light source and including means for producing oscillatory movement of said lure as it is pulled through the water, the improvement comprising:
- a guideway within said lure;
- a plurality of stationary electrical contacts disposed along said guideway;
- circuit means for connection said contacts to said light source; and
- a disk-shaped battery disposed within said guideway and adapted to roll therealong in response to said oscillatory movement, said battery including terminals adapted to engage said contacts and to thereby intermittently energize said light source as said battery moves along said guideway.

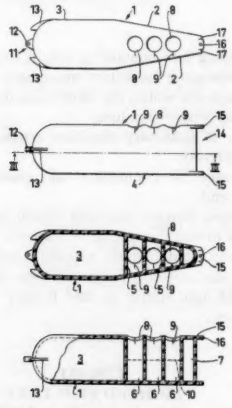
4,250,651
LIGHTED FISH LURE
Clarence Ramme, 65 G, Aurora, Minn. 55705
Filed Feb. 26, 1979, Ser. No. 14,866
Int. Cl.³ A01K *85/01*
U.S. Cl. 43—17.6 **1 Claim**



1. A lighted fish lure comprising:
(a) a single elongated body having
(b) a central portion,
(c) said central portion having an air chamber formed in substantially the upper half portion thereof and extending substantially the length thereof, and
(d) a battery chamber parallelly disposed to and alongside a portion of said air chamber in substantially the lower half portion of said central portion and spaced from and independent of said air chamber,
(e) said body having a rear cap,

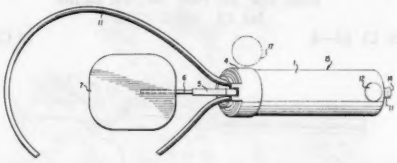
(f) means for removably connecting said rear cap to the rear end of said body,
(g) said central portion having a hollow translucent front section,
(h) means mounting a light bulb to extend partially into said front section,
(i) at least one battery mounted in said battery chamber, and
(j) means urging said battery into contact with said light bulb to light the same when said rear cap is connected to said central body portion.

4,250,652
CASTING WEIGHT
Roland Hellander, 9 Gamla Landsvägen, Arvidsjaur, Sweden (S-930 80)
Filed Sep. 14, 1978, Ser. No. 942,756
Claims priority, application Sweden, Sep. 15, 1977, 7710336
Int. Cl.[3] A01K *97/04, 91/00*
U.S. Cl. 43—41.2 **7 Claims**



1. A casting weight for a plurality of lures each suspended on a line by means of a suspension snell, said weight comprising an elongated hollow body weighted at one end and having means at the other end for connecting the line to the weight, a buoyant portion formed in said body, a storage compartment in said body for storing lures, when fishing is not carried on, a plurality of line engaging lug means provided at least at the opposite ends of the body and adapted to form holding points for the line as the same is wound around said body in a longitudinal direction, and means for locking the snells when the lures are placed in said storage compartment, said compartment being separated by walls from the buoyant portion of the body and comprising a plurality of pockets adapted to receive one lure each, said pockets being separated from each other by partitions and each pocket having an opening formed in a circumferential wall of said body, said locking means being in the form of slits extending from the openings and tapering toward narrow ends remote from the openings and being substantially perpendicular to the line receiving area of the body which is defined in said line engagement lug means, and said lug means being located so as to bring the line as the same is around said body to leave said openings and slits free for successive introduction of lures in said pockets and locking of their snells in said locking slits.

4,250,653
HUMANE ANIMAL TRAP
Elmer T. Davies, Duane Rd., St. Regis Falls, N.Y. 12980
Filed Feb. 5, 1979, Ser. No. 9,492
Int. Cl.[3] A01M *23/34*
U.S. Cl. 43—87 **3 Claims**

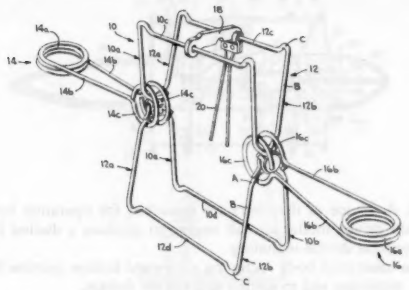


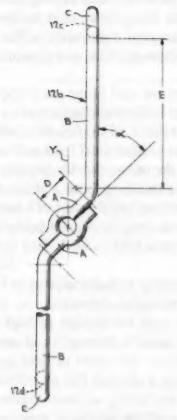
1. A humane animal trap adaptable to extend toward an animal to ensnare the animal's leg while not blocking blood flow through said leg comprising:
(a) telescoping means having at least two interconnected, hollow telescoping members which may be moved relative to each other;
(b) biasing means connected between said members to bias said members apart so that said telescoping means is biased in an extended position;
(c) trigger means connected to said members for selectively retaining said telescoping means in a retracted position;
(d) trip means associated with said trigger means for releasing said trigger means;
(e) loop means having a first portion attached to one of said members and having a second portion extending beyond said telescoping means whereby activation of said trip means releases said trigger means, causing said biasing means to force said members apart thereby placing said telescoping member in the extended position, the telescoping means extending toward the second portion to close the trap, wherein said telescoping means is comprised of a main barrel having first and second ends, a slave barrel located within said main barrel and having first and second ends, and a working barrel located within said slave barrel and having first and second ends, wherein the second end of the main barrel engages the first end of the slave barrel, the second end of the slave barrel engages the first end of the working barrel and the biasing means is connected between the working barrel and the first end of the main barrel, said trigger means is a rigid element having first and second ends, the first end of the rigid element being hingedly affixed to the second end of the main barrel, and said trip means is a rigid element having first and second ends, the first end of the trip means being hingedly affixed to the second ends of said main barrel, said rigid member releasably engaging the second end of said rigid element and selectively retaining said rigid element in a position to prevent said slave barrel and said working barrel from extending apart from said main barrel whereby movement of said rigid member causes said rigid member to disengage said rigid element thereby permitting said biasing means to extend said slave barrel and said working barrel apart from said main barrel, said loop means is a length of cable having ends connected to said main barrel and having a middle portion extending through and beyond said working barrel to form a loop, said biasing means is a spring having a first end engaging the first end of said main barrel and having a second end engaging the second end of said working barrel, said spring being in a compressed condition when said barrels are in a retracted position, said trip means is located within the second portion of said loop means, said trip means is comprised of a trip sear hinged to an outer barrel of said telescoping means, and a trip pan is connected to said trip sear, said trip pan forming an acute angle with an axis of said telescoping means.

4,250,654
ROTATING FRAME ANIMAL TRAP

Anthony J. Souza, Lancaster, and William E. Askins, Lititz, both of Pa., assignors to Woodstream Corporation, Lititz, Pa.

Filed Apr. 25, 1979, Ser. No. 33,238
Int. Cl.[3] A01M *23/26*
U.S. Cl. 43—90 5 Claims



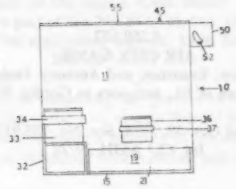


1. A trap for animals comprising two frames, each frame having first and second side members forming the jaws of the trap and having first and second end members joining together the side members, first pivot means connecting together the first end members of the two frames and second pivot means connecting together the second end members of the two frames such that the first end members and second end members are connected on a common axis so that the frames can pivot about said axis from an open position of the trap in which the first side member of one frame is closely adjacent and parallel to the first side member of the other frame to a closed position in which said first side member of said one frame is closely adjacent and parallel to the second side member of said other frame, each of the members consisting of two parallel non-collinear sections connected by a third section forming an angle in the range of $\pm 45°$ to $\pm 55°$ with each of said two parallel non-collinear sections, said end members being positioned to cross one another only at the common axis when the trap is open and closed, each of said parallel non-collinear sections being longer than the third section by a factor between 2.65 and 4.75, two ring members encircling said first end members one on either side of said first pivot means, each ring member being freely slidable along said end members and sized to bring together said end members in the closed position of the trap, spring means for urging apart the ring members toward the side members when the trap is being closed, and trigger means for maintaining the trap in open position against the action of the spring means and for releasing the trap to its closed position when triggered.

4,250,655
RODENT OR VERMIN TRAP

Rupert H. Munns, Gogango, via Rockhampton, Queensland, Australia (4702)

Filed Jun. 21, 1979, Ser. No. 50,634
Claims priority, application Australia, Jun. 26, 1978, PD4859
Int. Cl.[3] A01M *23/38*
U.S. Cl. 43—99 8 Claims

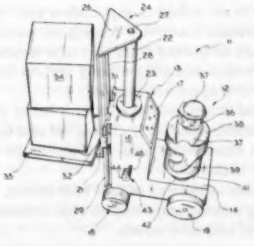


1. A rodent or vermin trap including:
a chamber;
a floor in said chamber;
a roof on said chamber;
an entrance to said chamber adjacent said roof;
a trap entrance spaced from said chamber;
a passageway connecting said trap entrance to said chamber entrance, the passageway having an upwardly inclined floor and an inwardly inclined wall in the direction of said chamber entrance;
a first bait means in said chamber adjacent said roof;
at least two spaced electrodes between said chamber entrance and said first bait means, said electrodes being insulated from said chamber and adapted to be raised to an electric potential to cause rodents or vermin entering said chamber to receive an electrical shock and fall to said chamber floor; and
a second bait means disposed adjacent said trap entrance to lure rodents or vermin into said passageway.

4,250,656
FIGURINE PUMP TOY

Gordon A. Barlow, Evanston; John R. Krutsch, Glenview, and Michael J. Zidman, Deerfield, all of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Jun. 8, 1979, Ser. No. 46,795
Int. Cl.[3] A63H *29/16*
U.S. Cl. 46—44 12 Claims



1. A toy system,
said system comprising one or more figurines,
said one or more figurines formed by at least two co-operating figurine elements;
fluid pump means integral to said figurines,

said fluid pump means formed by said two or more cooperating figurine elements so as to preclude the need for independent pump means therefor;

pressurized fluid operated equipment, and

interfacing means for interfacing said fluid pump means and said pressurized fluid operated equipment, whereby the actuation of said pump means provides pressurized fluid which operates said pressurized fluid operated equipment.

4,250,657

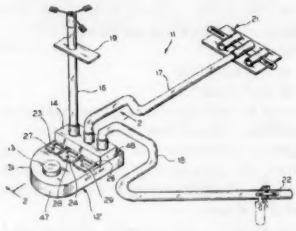
AIR CITY GAME

Gordon A. Barlow, Evanston, and Anthony Janiszewski, Elmwood Park, both of Ill., assignors to Gordon Barlow Design, Skokie, Ill.

Filed Oct. 30, 1978, Ser. No. 955,912

Int. Cl.³ A63H *29/16*

U.S. Cl. 46—44 **7 Claims**



1. A tube transportation system game;

said game comprising an air pump device for use in transporting objects in transportation tube means,

said air pump device comprising a single motor driven impeller for generating unidirectional air flow,

an impeller compartment surrounding said impeller,

a control compartment juxtaposed to said impeller compartment,

manifold means for coupling said air pump device to said tube means,

first aperture means in said impeller compartment coupling said impeller compartment with both said manifold means and ambient air,

second aperture means in said control compartment normally connecting said control compartment with both said manifold means and the ambient air,

valve means for controlling the direction and the amount of the flow of air in said transportation tube means,

said valve means selectively forcing air outward from said tube means or inward from said tube means,

said valve means including a body section having first and second valve apertures therein,

said first and second valve apertures being positioned and sized to enable selectively closing off said first and second apertures from either said ambient air or said manifold means or both,

parking means at the end of said tube means,

said parking means comprising an object passage aperture at one end of said tube means,

said parking means further comprising platform means for automatically receiving an object transported from said tube means onto said platform means, and

windmill means attached to the end of said tube means to rotate responsive to movement of air through said transportation tube means.

4,250,658

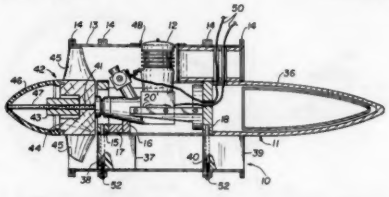
DUCTED FAN FOR MODEL AIRCRAFT

Robert W. Kress, 27 Mill Rd., Lloyd Harbor, N.Y. 11746

Continuation of Ser. No. 787,761, Apr. 15, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,767

Int. Cl.³ A63H *27/00*

U.S. Cl. 46—76 A **5 Claims**



1. A device of the character described for operation by a piston driven model aircraft engine to produce a ducted fan propulsion device including:

an inner core body including a forward hollow portion for receiving and mounting said engine therein,

a streamlined fairing projecting rearwardly from said hollow portion of said core body, said fairing having diminished cross sectional area away from said hollow portion,

a circular member carrying a plurality of fan blades situated forward of said hollow portion and connected for rotation by said engine,

a set of forward vanes on said inner core body, said forward vanes being located behind and adjacent to said fan blades,

a set of rear vanes mounted on said inner core body, said rear vanes being spaced behind said forward vanes,

a cylindrical shroud about the fan blades, the forward vanes and the rear vanes extending from a plane ahead of the fan blades to a plane behind the rear set of vanes, providing an annular duct surrounding said core body and vanes, and said shroud being attached to both said forward and rear vane sets,

said fan blades extending radially outward from said inner core body to said circular shroud,

whereby rotation of said fan blades at high speed by said engine propels air axially through said annular duct and said vane sets remove the swirl in said axially propelled air, thereby creating a ducted fan jet effect,

said inner core body including an inner framework comprising forward, intermediate and rear members at least partially circular, said members being attached together by spacers and longitudinal members respectively,

engine mounting means secured to said rear member, a thin flexible sheet covering substantially the entire framework leaving an opening between the intermediate and rear members for receiving the engine in said framework.

4,250,659

PENDOULOUSLY SUPPORTED MAGNETICALLY ACTUATED FIGURINE

Tamezo Ishiguro, Matsudara, Japan, assignor to Otagiri Mercantile Company, Inc., San Francisco, Calif.

Filed Jul. 25, 1979, Ser. No. 60,321

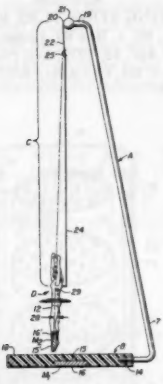
Int. Cl.³ A63H *33/26*

U.S. Cl. 46—238 **9 Claims**

1. In the combination of a base, a rod having a first end embedded in the base and a second end over said base, said second end having a support point positioned medially over said base, an object supported over said base, pendulous support means between said object and said support point, coacting magnets, a first magnet in said base and a second magnet in said object, the improvement in said support means comprising:

said support means including a torsion segment having a tensive member capable of receiving, storing, and dis-

charging torsional energy from said supported object; said support means including further a rigid segment not capable of storing appreciable torsional energy; said object



having a center of gravity eccentric from a line extending between said support point and said second magnet on said object whereby pendular movement of said supported object can be converted to spinning motion of said object.

4,250,660

PROCESS FOR PRODUCING COATED SEED

Shuji Kitamura; Masashi Watanabe, both of Ibaraki, and Michihiro Nakayama, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jun. 20, 1979, Ser. No. 50,334
Claims priority, application Japan, Jul. 12, 1978, 53-85391
Int. Cl.³ A01C *1/06*
U.S. Cl. 47—57.6 **12 Claims**

1. A process for producing a coated seed, which comprises mixing a coating powder with an aqueous solution of a water-soluble binder, drying the resulting mixture, powdering the mixture, and then coating a seed using the resulting surface-treated coating powder.

4,250,661

AGRICULTURAL COVERING MULTILAYER FILM OR SHEET STRUCTURE AND METHOD FOR THERMAL INSULATION

Yoshiaki Kodera, Kusatsu; Kiyoyuki Watanabe, Jyoyo; Tetsuo Kadoya, Osaka, and Tadashi Taguchi, Kyoto, all of Japan, assignors to Sekisui Kagaku Kogyo K.K., Japan

Division of Ser. No. 911,955, Jun. 1, 1978. This application Aug. 23, 1979, Ser. No. 68,965
Int. Cl.³ A01G *9/00;* **B32B** *5/18, 27/42;* **A01G** *9/24*
U.S. Cl. 47—58 **4 Claims**

1. A method for maintaining an agricultural locus at temperatures suitable for the growth of plants, which comprises covering the locus with a covering multilayer film or sheet structure for agricultural application, which consists essentially of (1) a film or sheet of a resin composition comprising (A) 100 parts by weight of a thermoplastic resin selected from the group consisting of polyethylene, ethylene/vinyl acetate copolymer, mixtures thereof, and vinyl chloride resins and (B) about 1 to about 40 parts by weight of an acetal resin having a degree of polymerization of about 500 to about 3,500 and selected from the group consisting of polyoxymethylene polymer and polyoxymethylene copolymer containing up to 3% by weight of a comonomer, and (2) a layer of the thermoplastic resin (A) laminated to at least one surface of the film or sheet (1).

2. The method of claim 1 wherein at least one of the film or sheet (1) and the resin (A) layer (2) is in the foamed state.

4,250,662

METHOD OF SUPPORTING THE GROWTH OF GRASS, FLOWERING PLANTS, SHRUBS AND DECORATIVE PLANTS

David H. Rees, 315 Chestnut St., and Gerald A. Hickey, 110 W. Castle St., both of Mt. Shasta, Calif. 96067

Continuation-in-part of Ser. No. 843,436, Oct. 18, 1977, Pat. No. 4,154,174. This application May 14, 1979, Ser. No. 38,883
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **11 Claims**

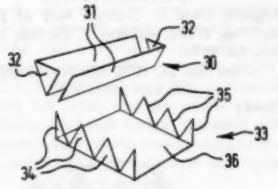
1. A method of enhancing the growth of rooted greenery comprising locating the root system thereof in a growth supporting medium including a quantity of ground incense cedar timber remnants including bark, sawdust and wood.

4,250,663

PROPAGATOR FOR GROWING AND TRANSPLANTING PLANTS

Leonard G. Merritt, Watford, England, assignor to Merrittstyle Products Limited, Watford, England

Filed Nov. 13, 1978, Ser. No. 959,747
Claims priority, application United Kingdom, Aug. 21, 1978, 34062/78
Int. Cl.³ A01G *9/10*
U.S. Cl. 47—73 **3 Claims**



1. A propagator for growing and transplanting plants, comprising:

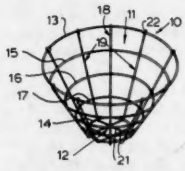
a container for receiving a growing medium and which can be dismantled when full of growing medium without disturbing that medium, said container comprising a first and a second boundary wall, said first and second boundary walls being identical and each comprising a rectangular side wall and a single triangular end wall which extends from the side wall at right angles to said side wall, said end wall being at one end of said side wall, whereby when said first and second boundary walls are assembled with said side walls opposed and with said end walls spaced apart and substantially parallel and each abutting the side wall of the other one of said first and second boundary wall said container is formed with an upwardly open interior of V-shaped cross section, each boundary wall being independently movable from the other one of said boundary walls at all times; and

support stand means having a V-shaped recess complementary to the shape of the container whereby the boundary walls of the container can be supported by the support stand means in a desired configuration to form the container.

4,250,664
WIRE BASKET

Adam R. Remke, 5636 W. Goodman St., Chicago, Ill. 60630

Filed Jul. 20, 1979, Ser. No. 59,289
Int. Cl.[3] A01H *11/00*
U.S. Cl. 47—76 6 Claims

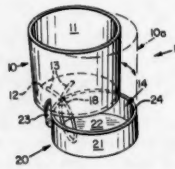


1. A wire basket which comprises a plurality of axially spaced wire rings including a top ring and a bottom ring, a plurality of circumferentially spaced U-shaped brace wires surrounding said wire rings providing upstanding strut portions holding the rings in axially spaced relation and bight portions forming a basket bottom, one of said brace wires having the strut and bight portions lying in a substantially vertical plane on the axis of the basket, other of said brace wires having strut and bight portions angularly offset relative to said axis, and the bight portions of the brace wires crossing at points radially spaced from the center of the bottom ring of the basket forming a pair of three wire cross overs in overlapped contact on a line on said plane on said axis of the basket and a pair of additional wire cross overs in overlapped contact intermediate the pair of three wire cross overs on opposite sides of said axis.

4,250,665
PLANTER SYSTEM

Roy L. English; Irene F. English, both of 2733 SE. 31st, Portland, Oreg. 97202, and Roy V. English, P.O. Box 1006, Fairbanks, Ak. 99701

Filed Sep. 15, 1978, Ser. No. 942,822
Int. Cl.[3] A01G *9/02*
U.S. Cl. 47—81 10 Claims



1. A planter system adapted for controlling both evaporation and the rate of addition of moistening liquid to growth media located therewith, comprising:

(a) means for housing said growth;

(b) means for storing said moistening liquid, the housing and storing means being disposed one with respect to the other for rotational movement to an open or closed position, in the closed position, the housing and storage means being in vertical alignment one with respect to the other, and in the open position, the housing and storage means not being vertically aligned so that a filling passageway is provided for adding said moistening liquid to said storage means;

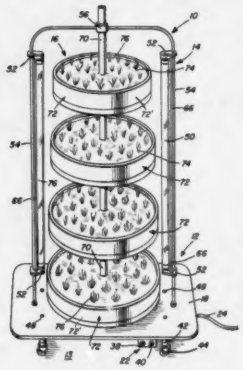
(c) means for transferring said moistening liquid, in a controlled manner, to said growth media; and

(d) means for connecting said respective housing and storage means one to the other so that when the planter system is moved to an open position, attachment is maintained between the respective housing and storage means.

4,250,666
SUPPORTING STRUCTURE FOR PLANTS

Roy R. Rakestraw, Rt. 1, Box 80, Lamar, Mo. 64759

Filed Apr. 10, 1979, Ser. No. 28,848
Int. Cl.[3] A01G *9/02*
U.S. Cl. 47—83 11 Claims



1. A structure for supporting growing plants comprising a rotatable container assembly, means for rotating said assembly, a plurality of elongated vertically disposed illuminating means for illuminating the plants, and a base assembly resting on a flat surface and supporting the container assembly and the illuminating means, the container assembly holding the growing plants and moving with respect to the illuminating means in regularly recurring fashion so as to effect substantially uniform illuminating of all plants held in the container assembly, said container assembly comprising a plurality of trays including a vertical periphery and a bottom to form an enclosure for holding soil for supporting growing plants and a central vertically disposed support rod rotatably mounted on the base assembly and supporting the trays in a vertically spaced relation on the rod for rotation about a horizontal plane, said base assembly comprising a flat base plate and support means extending upwardly therefrom which support said illuminating means outside the periphery of the trays, said illuminating means extending upwardly substantially throughout the vertical extent of said container assembly, whereby the illuminating means illuminates the plants held in the trays.

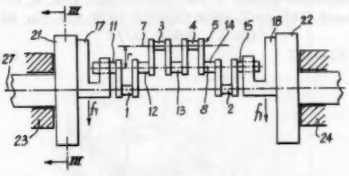
4,250,667
DEVICE FOR SUPPORTING A CRANKSHAFT HAVING FOUR CRANKPINS ON A GRINDING MACHINE

Paul Favrot, Gagny, France, assignor to Constructions de Clichy, Bobigny, France

Filed Jul. 6, 1979, Ser. No. 55,657
Claims priority, application France, Jul. 7, 1978, 78 20249
Int. Cl.[3] B24B *5/42*
U.S. Cl. 51—237 CS 4 Claims

1. A device comprising two rotary carrier-plates for supporting a crankshaft having four crankpins located in the same plane on a grinding machine, each carrier-plate being fitted with a carriage equipped with a chuck for gripping one end of a crankshaft to be ground, said carriage being slidably mounted on the face of said carrier-plate on a diametral guide and being thus capable of moving between two work positions in which the geometrical axis of the chuck is located symmetrically with respect to the axis of rotation of the carrier-plate and at a distance from said carrier-plate which is equal to the radius of rotational motion of the geometrical axes of the crankpins,

driving means for bringing and maintaining said carriage selectively into one of said work positions for grinding corresponding crankpins of a crankshaft which is gripped and positioned angularly within said chucks in such a manner as to ensure that the geometrical plane containing the axes of the crankpins and the axis of the crankshaft is located in the diametral geometrical plane of displacement of the chuck axis with respect to the rotary carrier-plate, said carrier-plates being further adapted to carry movable counterweights for balancing the masses of the



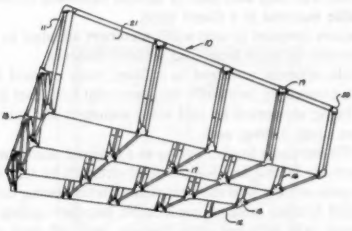
equipped carriages and of the crankshaft in respect to each of the two aforesaid work positions of the carriages, said driving means for producing radial displacements of the carriages on the carrier-plates being of the motor-driven type and wherein said counterweights comprise two movable balancing counterweights mounted on each carrier-plate on each side of the path of travel of the carriage and connected to said carriage by means of a transmission system for causing said counterweights to move with respect to the carrier-plate in the direction opposite to the movement of the carriage.

4,250,668

CEILING STRUCTURE

John E. Harrison, Jr., 1300 Parkins Mill Rd., Greenville, S.C. 29607

Filed Sep. 20, 1979, Ser. No. 77,326
Int. Cl.³ G09F *7/18*
U.S. Cl. 52—39 **5 Claims**



1. A decorative grid structure for use positioning a length of decorative fabric in open width as a ceiling inside buildings comprising:

a three-dimensional grid;

said grid including longitudinally spaced transverse bars in substantially horizontal alignment;

said bars being alternately positioned in vertically spaced planes;

means connecting said bars forming said grid; and

said grid being so disposable in elevated position receiving at least one length of cloth fastened upon said bars in alternating over and under relation to adjacent bars;

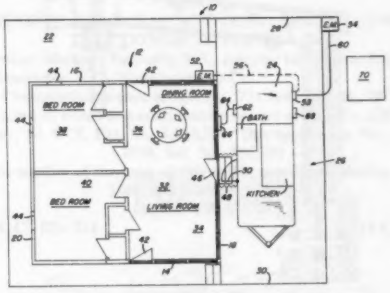
whereby an appearance of said ceiling may be changed by changing the fabric.

4,250,669

DWELLING STRUCTURE

Robert F. Freeauf, 4487 Mt. Troy Road Extension, Pittsburgh, Pa. 15214

Filed Sep. 22, 1978, Ser. No. 944,788
Int. Cl.³ C04H *1/12*
U.S. Cl. 52—79.8 **3 Claims**



1. A permanently fixed dwelling adapted to receive a portable trailer housing unit adjacent thereto, said dwelling being devoid of plumbing facilities and utilizing the bathroom and kitchen facilities of such portable trailer housing when the two are joined together, said dwelling comprising:

a general living area;

a sleeping area;

portal means for permitting egress and ingress to the dwelling;

means, positioned proximate one of said portal means, for joining the portable trailer housing unit to said dwelling for making a relatively airtight connection between the two when the two are joined and making a complete functional home when the two are joined; and

electrical wiring, said electrical wiring emanating from a common outlet positioned on the exterior of said dwelling and a source of incoming electricity positioned outside said dwelling, said outlet and said source being connectable by suitable electrical wiring contained within such portable trailer, such portable trailer acting as an electrical safety switch between said outlet and said source.

4,250,670

METHOD AND ARTICLE FOR USE IN BUILDING CONSTRUCTION

Larry Garner, P.O. Box 502, Chapman, Kans. 67431

Filed Nov. 30, 1978, Ser. No. 964,900
Int. Cl.³ E04B *1/68*
U.S. Cl. 52—92 **13 Claims**

1. A method of constructing a building on the ground comprising the steps of:

constructing a rigid footing at a location below the ground surface;

providing a plurality of rigid blocks each having an opening therethrough;

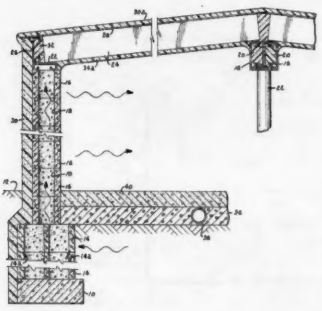
placing said blocks on top of said footing and one another to form walls on top of the footing with the openings of the blocks in registration to present conduits in the walls extending from beneath the ground surface, whereby air from beneath the ground surface flows into said conduits by natural convection and thence into the interior of the building within the walls to thermally affect the interior of the building; and

providing a roof on said walls to substantially cover the interior of the building.

4. In a building, the combination of:

a plurality of walls connected with one another to define an

interior region of the building, said walls each being formed by a plurality of rigid blocks placed on top of one another and having openings which register with openings of adjacent blocks to present a plurality of substantially vertical conduits in the walls adapted to receive a flow of air, some of said blocks being disposed beneath the ground surface in a zone wherein the temperature is relatively constant, whereby air from said zone can enter said conduits and flow within the walls and thence into the interior region of the building by natural convection;



a layer of rigid foam on the outside surface of each wall to provide thermal insulation and structural support; and

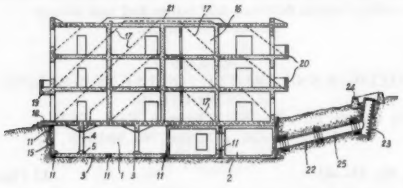
a roof mounted on said walls to substantially cover the interior region of the building.

4,250,671

ANTI-SEISMIC CONSTRUCTIONS, IN PARTICULAR CONSTRUCTIONS WITH BASEMENTS FORMING ANTI-ATOMIC SHELTERS

Jean-Raphaël Hirsch, Le Moulin des Roches, Les Mousseaux Par Ponchartrain, and Claude Di Crescenzo, 32 bis Rue de Clocheville, 37000 Tours, both of France

Filed Sep. 22, 1978, Ser. No. 944,739
Claims priority, application France, Sep. 22, 1977, 77 28622
Int. Cl.[2] E02D *27/34;* E04B *1/98*
U.S. Cl. 52—167 **7 Claims**



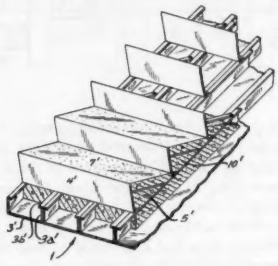
1. A construction liable to be subjected to seismic waves comprising a superstructure and buried sub-foundation elements forming anti-atomic shelters in which the buried sub-foundation elements comprise at least three independent elements having a mechanical strength such that each of them is capable of resisting without damage the seismic wave of maximum intensity and to sustain at least a third of the weight of the superstructure, the superstructure resting on the sub-foundation elements through fulcrums and being mechanically resistant when isostatically supported on three non-aligned fulcrums distributed in a random manner amongst said fulcrums, the shearing stress of the connections of the superstructure fulcrums on the elements being lower than the global shearing stress of the structure elements leading to said fulcrum, each sub-foundation element having a mechanical strength such that it is capable of resisting without damage the seismic wave of maximum intensity and any two of said sub-foundation elements being spaced from each other a distance at least equal to the compressibility of a thickness of ground equal and parallel to their larger horizontal dimension under the maximum pressure developed by said seismic wave of maximum intensity.

4,250,672

EXTERNALLY REINFORCED CONCRETE STAIRS

Glen A. Seegers, and H. James Seegers, both of Chicago, Ill., assignors to American Stair Corporation Inc., Willow Springs, Ill.

Continuation-in-part of Ser. No. 967,987, Dec. 4, 1978, abandoned. This application Oct. 22, 1979, Ser. No. 86,919
Int. Cl.[3] E04F *11/14*
U.S. Cl. 52—182 **6 Claims**



1. An externally reinforced stairway structure comprising

a plurality of elongated soffit members arranged in a side by side relationship and adapted to be supported solely at their respective ends,

means for supporting said soffit members solely at said ends,

each of said soffit members having a bottom wall and a pair of spaced sidewalls integrally projecting from said bottom wall, said bottom wall and sidewalls extending longitudinally between said ends of said soffit members,

at least one of said spaced sidewalls of said soffit members being rigidly coupled to the sidewall of an adjacent soffit member to form a unitary support structure,

said soffit member acting as a formwork created by said bottom wall and said pair of spaced sidewalls to receive settable material in a fluent state,

riser means coupled to said soffit members adapted to form a plurality of steps from said settable material,

a settable material arranged in a fluent state on said formwork created by said soffit members and said riser means and being supported by said soffit members and said riser means upon setting, and

said soffit members further acting as a stressed skin structure to provide lateral and longitudinal strength to said material upon setting, said stressed skin structure being created by said bottom wall of each soffit member acting as a stressed skin member, said bottom wall of each soffit member carrying a significant part of the load applied to the soffit members upon setting of said fluent material.

4,250,673

WINDOW REPLACEMENT SYSTEM

S. Eugene Hubbard, Niles, Mich., assignor to Kawneer Company, Inc., Niles, Mich.

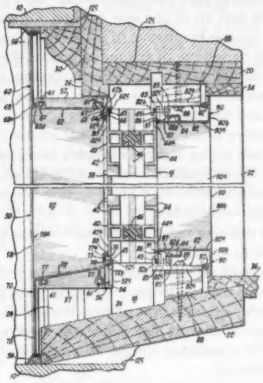
Filed May 25, 1979, Ser. No. 42,583
Int. Cl.[3] E06B *1/04*
U.S. Cl. 52—211 **52 Claims**

28. Apparatus for trimming the periphery of a window for mounting in an opening of an existing wall structure of a building, comprising:

an elongated exterior trim element including a flange adapted to extend outwardly of a side frame member of

said window and a fascia portion extending between said flange and an adjacent edge of said opening when said window is mounted therein, and

elongated connector means along an inner edge of said flange for providing a continuous interlock between said



frame member and said trim element, said elongated connector means including means forming a pivotal interconnection between an edge portion of said window frame member and said flange of said trim element continuously along the length thereof.

4,250,674

PANELS FOR CLADDING FLOORS, WALLS AND CEILINGS OF ROOMS

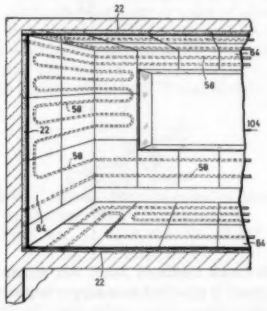
Artus Feist, Weidenweg 9, Bensberg-Refrath, Fed. Rep. of Germany (5060)

Filed Dec. 12, 1977, Ser. No. 859,523

Claims priority, application Fed. Rep. of Germany, May 6, 1977, 2720361; May 26, 1977, 2723793; Jun. 3, 1977, 2725071; Sep. 21, 1977, 2742429

Int. Cl.[2] **E04B** *4/58*

U.S. Cl. 52—220 **25 Claims**



1. A base panel for use in a surface facing system, said panels serving to support heating/cooling media ducting and to carry face plates covering said ducting,

said base panel having a substantially planar face adapted to be secured to said surface and, on the opposite face thereof, a plurality of first projections and a plurality of second projections, each of said first and second projections being of generally cylindrical configuration with the diameter of said first projections being greater than the diameter of said second projections, said first and second projections each being located in uniformly spaced rows with rows of said first and second projections alternating, the free space between adjacent ones of said rows being of a width substantially equal to the external diameter of said ducting.

4,250,675

METHOD FOR FORMING WIRING CHANNELS IN A CONCRETE FLOOR

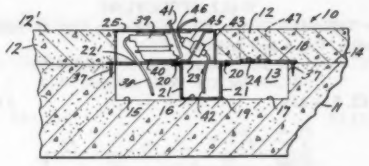
Gershon Meckler, Bethesda, Md., assignor to Gershon Meckler Associates, P.C., Washington, D.C.

Continuation-in-part of Ser. No. 771,789, Feb. 24, 1977, abandoned, which is a continuation-in-part of Ser. No. 639,295, Dec. 10, 1975, Pat. No. 4,030,259. This application Nov. 28, 1978, Ser. No. 964,230

The portion of the term of this patent subsequent to Jun. 21, 1994, has been disclaimed.

Int. Cl.[3] **E04B** *5/48*

U.S. Cl. 52—221 **14 Claims**



1. A method for forming a plurality of electrical wiring ducts in a prefabricated building floor slab comprising the steps of: forming said floor slab from a hardenable material; forming at least one trench in an upper surface of said floor slab before such material hardens; after such material at least partially hardens, placing a metal cover plate having a U-shaped channel attached thereto over said trench with said channel dividing said trench into at least two parallel ducts with one duct defined by said cover plate and said U-shaped channel and at least one other duct defined by said cover plate, said U-shaped channel and said trench, and, after such material hardens into a prefabricated building floor slab, positioning said slab on suitable supports of a building.

9. A method for forming a building floor structure with a plurality of wiring ducts therein comprising the steps of: forming at least two floor slabs from a hardenable material with a fraction of a trench extending along an upper edge of one of the slabs and the remaining fraction of the trench extending along an upper edge of the other slab; positioning said slabs with said trench fractions abutting; grouting a joint extending between said floor slabs below said trench fractions; and positioning a U-shaped channel to divide the trench formed by said trench fractions into at least two separate ducts and positioning a cover plate over the trench formed by said trench fractions and said U-shaped channel.

4,250,676

PANEL INTERCONNECTING AND UPHOLSTERY-RETAINING CONNECTION FOR A TUBULAR FRAME

Benedict F. Presby, Plainfield Township, Northampton County, Pa., assignor to Knoll International Inc., New York, N.Y.

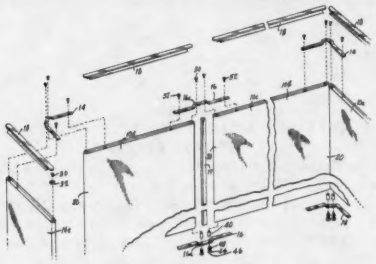
Filed Sep. 19, 1978, Ser. No. 943,807

Int. Cl.[3] **A47G** *5/00*

U.S. Cl. 52—222 **15 Claims**

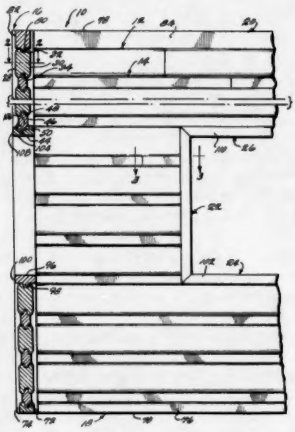
1. An upholstery-retaining connection for a tubular frame comprising a tubular insert extending into said tubular frame, a tubular upholstery retainer extending into said tubular insert

with upholstery material sandwiched between said tubular insert and said upholstery retainer, and wedging means bearing



against the inside of said tubular insert urging said insert against said tubular frame.

4,250,677
WALL STRUCTURE
Peter Yablonski, Saxton, Pa., assignor to Guy D. Marcocci, Dudley, Pa., a part interest
Filed Feb. 5, 1979, Ser. No. 9,364
Int. Cl.[3] E04B *1/10*
U.S. Cl. 52—233 **3 Claims**



1. A wall structure comprising a multiplicity of elongated wall panel forming members and elongated wall periphery forming members,

said wall panel forming members being constructed to extend in horizontal courses with alternate courses being formed of siding elements and bar elements,

each of said siding elements including panel defining opposed faces simulating logs, opposed side portions having elongated grooves therein and opposed end portions having recesses therein forming lap sections,

said bar elements including opposed panel defining faces simulating mortar, opposed side portions having elongated tongues thereon of a size to engage within the elongated grooves in the side portions of said siding elements and opposed end portions having recesses therein forming lap sections similar to the lap sections in the end portions of said siding elements,

said elongated periphery forming members including elongated corner, base plate, and top plate elements,

each elongated corner element having end portion receiving faces intersecting one another at an approximate right angle, each of said faces having a width greater than the distance between the panel defining faces of said siding elements and an elongated channel shaped to receive the lap sections of said siding and bar elements spaced outwardly from the face juncture approximately one-half the width thereof,

each elongated base plate element having a planar lower side portion and an upper side portion formed with an elongated tongue or groove of a size to interengage with the groove or tongue of the initial course thereabove,

each elongated top plate element having an upper planar side portion and a lower side portion formed with an elongated tongue or groove of a size to interengage with the groove or tongue of the final course therebelow,

each of said siding and bar elements being of uniform cross-sectional configuration between the lap sections of the end portions thereof which cross-section is symmetrical about a medial vertical line,

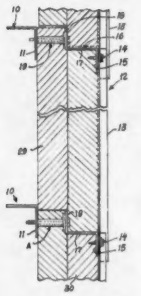
the panel defining faces of each bar element being planar and parallel to each other,

the tongues of each bar element having a width less than the distance between the panel defining faces thereof with the remainder of each side portion thereof being constituted by a pair of aligned planar surfaces each of which extends from the associated tongue to one of the panel defining faces thereof,

each side portion of each siding element having a pair of aligned planar surfaces of a size to engage the pair of aligned planar surfaces of the adjacent bar element,

each panel defining face of each siding element including a planar central vertical surface and a convexly arcuate surface extending therefrom to one of each of the pairs of adjacent planar surfaces.

4,250,678
MOUNTING FOR INSULATED PANEL
Victor Skuran, Chicago, Ill., assignor to Transco, Inc., Ill.
Filed Apr. 30, 1979, Ser. No. 34,253
Int. Cl.[3] E04B *1/60, 2/82*
U.S. Cl. 52—478 **3 Claims**



1. A prefabricated insulated panel and mounting therefor whereby the panel is attached to a supporting structure comprising:

(a) an elongated Z-shaped panel mounting member, one leg of which is adapted to extend in spaced parallel relation to the supporting structure,

(b) a spacer mounted on said one leg of said member and extending in the direction of, and bearing against, the supporting structure,

(c) a first batt of insulating material mounted on said spacer so as to extend from between the supporting structure and said one leg of said Z-shaped panel mounting member,

(d) a connector carried by said spacer connecting the same and said first batt of insulating material to the supporting

structure with said panel mounting member in spaced relation thereto,

(e) a cover connected to the other of said legs of said Z-shaped panel mounting member and extending in a spaced parallel relation to said first batt of insulating material and,

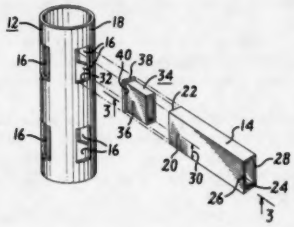
(f) a second batt of insulating material mounted on the rear surface of said cover and behind said other of said legs of said panel mounting member and having a thickness equal to the length of the medial portion of said panel mounting member and having one edge abutting thereagainst so as to extend between said cover and said first batt of insulating material.

4,250,679

FRAME STRUCTURE HAVING REINFORCED JOINTS

Robert J. Burg, 508B High Point Dr., Hartsdale, N.Y. 10530

Filed Aug. 3, 1979, Ser. No. 63,362
Int. Cl.[3] E04H *12/00*
U.S. Cl. 52—654 **14 Claims**



1. A framing structure comprised of interconnected upright hollow frame members joined to cross frame members, each of said cross-members having a first and a second end, at least one of said joints having an aperture through a wall portion of an upright member, said aperture being adapted to receive therein one of said ends of a cross-member; said cross-member having a slot therein adapted slidably to engage and retain therein an edge portion of the wall defining the aperture of said upright member when said cross-member is inserted in said aperture, thereby joining said upright and said cross-members, a reinforcing plug of dimensions such as to fit snugly to said cross-member, said reinforcing plug having a slot of substantially the same size as, and in substantial register with the slot in said cross-member when said plug and said cross-member are fitted together whereby said slots in register combine to engage and retain the edge portion of the wall of said upright frame member.

4,250,680

CLAD WINDOW

William H. Bomar, Grimes, Iowa, assignor to Monarch Manufacturing Co., Waukee, Iowa

Filed Apr. 12, 1979, Ser. No. 29,327
Int. Cl.[3] E04C *2/38*
U.S. Cl. 52—656 **6 Claims**

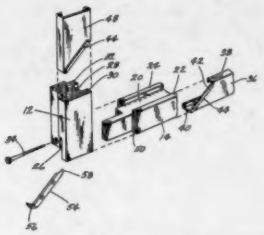
1. A clad window comprising,

a pair of spaced apart, substantially parallel stiles,

a pair of spaced apart, substantially parallel rails which join said stiles to form a window frame assembly, and

metal cladding members which cover at least the front face portion of each of said stiles and rails, each of said cladding members being mitered at their opposite ends, edges which join mitered edges of other cladding members to form a mitered corner juncture, said mitered edges having a portion of each turned back to provide a flange, and

a cladding retaining clip which releaseably, and slidably, engages the flanges of said mitered edges at each of said mitered corners to releaseably secure said cladding to said stiles and rails and to sealingly cover said mitered corner juncture making it substantially weather impervious,



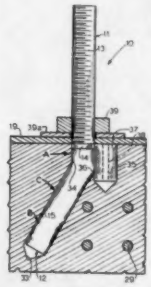
each of said cladding members when not retained by said retaining clip being capable of independent sliding movement along the rail or stile that it covers.

4,250,681

REMOVABLE AND REUSABLE ANCHOR AND METHOD

James F. Helderman, 414 S. Maple St., Graham, N.C. 27253

Filed Dec. 10, 1979, Ser. No. 102,549
Int. Cl.[3] E04B *1/38*
U.S. Cl. 52—704 **13 Claims**



1. A reusable heavy duty anchor device adapted to be removably secured to a structure formed of concrete or other hard material and having a round anchor receiving hole extending inwardly from and having the axis thereof angled with respect to the plane of an outer surface of the structure, said anchor device comprising:

(a) an integral rigid rod member formed from solid resilient rod stock of round cross section and having:

(i) a first anchor section adapted to fit within said hole with a major end portion extending from the entrance into the hole being aligned with an opposite minor end portion at the base of the hole and between the major and minor end portions having an intermediate misaligned portion providing a bearing surface on the inner wall thereof for engaging an opposing internal surface area of said hole and with reduced clearance as compared to the clearance established between the inner surface of said hole and the inner walls of said major and minor end portions; and

(ii) a second attachment section adapted to extend outwardly from the entrance of said hole when said first anchor section is secured in said hole to serve as an anchoring means on said structure, said second attachment section having a straight body portion, the axis of which is bent at an angle with respect to the axis of said first anchor section major and minor end portions, the extent of said angle being selected such that the axis of

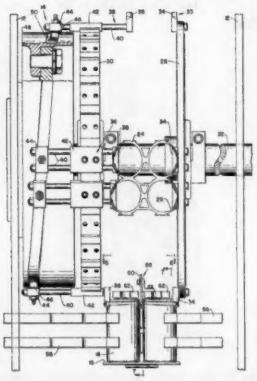
said straight body portion of said second attachment section may be oriented at a selected angle relative to the said surface of said structure when said first anchor section is fitted in said hole and when said attachment section is loaded to bring said bearing surface in frictional engagement with the opposing internal surface area of said hole to reduce the stress applied by the inner wall of said major end portion to said structure near the entrance of said hole.

4,250,682

WHEEL ASSEMBLY FOR USE IN AN APPARATUS FOR MULTIPACKAGING CONTAINERS

Leonard C. Braun, Bartlett, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Jul. 19, 1979, Ser. No. 59,019
Int. Cl.[3] B65B *27/04, 21/00*
U.S. Cl. 53—48 **6 Claims**



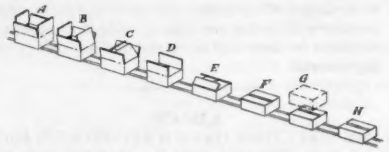
1. In an applicating machine for applying a carrier stock to containers in which the carrier stock is made of a resilient plastic material and comprises a longitudinally extending series of transversely arranged ranks of container encircling bands which are to be transversely stretched for application to successive ranks of a plurality of rows of containers passing through a work station in the machine, the improvement of a rotating wheel assembly for receiving said carrier stock and laterally stretching said carrier stock, said wheel assembly comprising a pair of spider wheels mounted in a parallel spaced apart relationship for rotation about a horizontal axis extending transversely to and above said series of containers, a series of pairs of opposed stretching members radially spaced about said horizontal axis carried on the periphery of each spider wheel and adapted to transversely stretch the carrier stock through application of forces only at the inner periphery of the outer band region of each rank of container encircling bands, a first member in each of said parts of stretching members being fixedly mounted to a first of said spider wheels and relative to the plane of rotation of said spider wheel, means for mounting the second member in each pair on a second of said spider wheels for reciprocating, linear, movement relative to its associated fixed first member in directions generally parallel to said horizontal axis.

4,250,683

BOX CLOSING MACHINE

Harry Barnett, 2990 SW. 22nd St., Fort Lauderdale, Fla. 33312

Continuation-in-part of Ser. No. 786,256, Apr. 11, 1977, Pat. No. 4,145,960. This application Mar. 19, 1979, Ser. No. 21,931
Int. Cl.[3] B65B *1/24, 7/20*
U.S. Cl. 53—138 R **7 Claims**



1. A box conveying, lifting and sealing apparatus, comprising:

a frame,

at least one drive means connected to said frame, said drive means for driving the conveying, lifting and sealing apparatus;

continuously moving conveyor means for moving boxes through said apparatus, said continuously moving conveyor means connected to said frame and said drive means;

said continuously moving conveyor means having an entrance area, a lifting area, a sealing area, and an exit area, said conveyor means moving through said entrance area, lifting area, sealing area, and an exit area at a generally constant speed;

lifting means connected to said frame in said lifting area for lifting boxes from said continuously moving conveyor means; in an independent reciprocating motion;

said lifting means including a platform for supporting a box thereupon, said lifting means connected to said drive means for vertically moving said platform, said lifting means including a switch means for actuating said lifting means, said switch means connected to a power means and located in the path of a box in said lifting area; and

a sealing means connected adjacent said sealing area and to said drive means, said sealing means for sealing the lids into a closed position when a box is brought into contact with said sealing means, said sealing means including an actuating means for actuating the sealing means to seal a box, said actuating means connected to said power means.

4,250,684

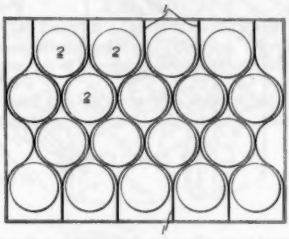
PACKAGING METHOD AND APPARATUS

Frederick W. Clegg, Wansford, England, assignor to Dupaylite Developments Limited, Cambridgeshire, England

Continuation-in-part of Ser. No. 813,557, Jul. 7, 1977, Pat. No. 4,149,355. This application Feb. 27, 1979, Ser. No. 15,682
Claims priority, application United Kingdom, Jul. 9, 1976, 28641/76
Int. Cl.[3] B65B *35/30*
U.S. Cl. 53—157 **11 Claims**

1. Apparatus for handling structural honeycomb material provided in the form of unexpanded slices, said unexpanded slices having opposite faces and an expansion direction which is normal to said opposite faces and said slices being expandable to an open-cellular state in which the slices present rows of open cells for the reception of articles to be packaged, one in each cell, by pulling them out in said expansion direction, said apparatus comprising a honeycomb receiving station, an unloading station separated from the receiving station and, between the receiving station and the unloading station an article reception zone, an endless conveyor movable through the receiving station, then through the reception zone, then through the unloading station and then back to the receiving station, attachment means on the conveyor for receiving the slices in the expanded open-cellular state at the receiving sta-

tion and holding them in said state for the reception of articles to be packaged in said cells during transit through the receiving station and at the honeycomb receiving station, expanding means having means to firstly grip each slice, by said opposite faces thereof and pull out the gripped slice in the expansion direction thereof to the open cellular state and to secondly



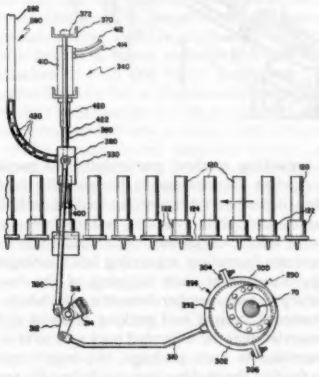
apply it in said state to the conveyor for said reception and holding by said attachment means, a receiver mounted on said expanding means for the reception and location of the unexpanded slices in turn relative the expanding grip means prior to said gripping operation and means for moving said receiver clear of each slice as said slice is expanded.

4,250,685

APPARATUS FOR FILLING CAULKING TUBES WITH IMPROVED MANIFOLD FOR FEEDING PLUNGER CAPS

Robert M. Elsworth, c/o Sam Gray, Mail Box 19, Georgetown, Exuma, The Bahamas, assignor to Robert M. Elsworth, Loudonville, N.Y.

Filed Apr. 27, 1979, Ser. No. 33,831
Int. Cl.[3] B65B *7/28*
U.S. Cl. 53—282 **20 Claims**



1. An apparatus for filling caulking tubes with liquid compositions with an improved manifold for feeding plunger caps to be inserted on the rear end of the caulking tubes, comprising,

a frame;

drive means at the lower end of said frame for driving conveyor belt means having thereon empty caulking tubes;

feeding means being driven by said drive means for feeding said liquid composition into six of said empty caulking tubes at a time;

linkage means at the lower end of said frame being driven by said drive means;

cap receiver means driven by said linkage means for positioning six plunger caps at a time at the ends of said filled caulking tubes;

piston and cylinder means activated by drive means for forcing six of said plunger caps at a time into the back of said six filled caulking tubes; and

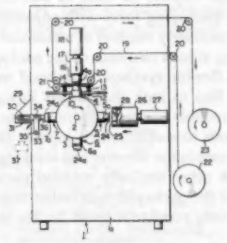
plunger cap manifold means for feeding plunger caps continuously, six at a time, to said cap receiver means where the manifold has six chutes going to said cap receiver means wherein said chutes are fed by a single central chute wherein the plane of said six chutes is vertical wherein they are joined to said single central chute and slopes into the horizontal plane where each of the six more or less chutes meet the cap receiver means and wherein none of the chutes have a width that is as wide as two diameters of the plunger caps.

4,250,686

CAP SEAL FITTING MACHINE FOR A CONTAINER

Masaaki Fujio, Suita, Japan, assignor to Fuji Seal Industry Co. Ltd., Osaka, Japan

Filed Oct. 12, 1979, Ser. No. 84,151
Claims priority, application Japan, Oct. 23, 1978, 53-130334
Int. Cl.[3] B65B *7/28;* B67B *3/04*
U.S. Cl. 53—296 **5 Claims**



1. A cap seal fitting machine for a container, comprising:

(a) a frame;

(b) a rotary disc plate which is pivotally mounted to the frame and is intermittently turned around its axis;

(c) a plurality of molds, each having a suction hole which extends radially in its center, for holding a cap seal, which are radially arranged in the periphery of the rotary disc plate at a specified angular interval;

(d) punching means for punching the cap seal to be fitted onto a cap of a container from a film sheet, mounted to the frame, comprising a die and a punch which cooperate each other, said punching means being adapted to be operated when one of the molds is positioned directly under the punching means while the rotary disc plate is stopped;

(e) molding means for molding the cap seal held on the mold into a desired shape, mounted to the frame, including a heat mold which is adapted to move onto one of the molds and cooperating therewith while the rotary disc plate is stopped; and

(f) cap seal transfer means, mounted to the frame, said cap seal transfer means being adapted to transfer the cap seal molded from one of the molds to the top of the container while the rotary disc plate is stopped.

4,250,687
PACKAGED TUBES OR RODS

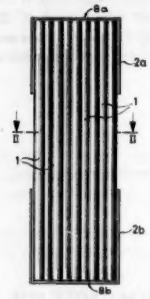
Hartmut Lueneberg; Reinhard Maennl, and Alfred Grillmeier, all of Mitterteich, Fed. Rep. of Germany, assignors to Schott-Ruhrglas GmbH, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,073

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 7714038[U]; Jul. 2, 1977, 2729966

Int. Cl.[3] B65B *23/00, 27/00, 53/06, 35/50*

U.S. Cl. 53—435 12 Claims



1. A method for packing and stacking the packages, comprising the steps of:

(a) cutting stiff hollow fragile tubular rods selected from the group consisting of glass and ceramics to equal length;

(b) arranging the cut rods into one rectangular package in which the objects lie next to one another in a closest possible packaging form with adjacent rows being offset by approximately one half of a diameter of one of the rods;

(c) encasing at least two ends of the package with a contracting thin flexible synthetic film hood means and contracting the film to lock the objects in tight fashion in said closest possible packaging form and to close off the ends of the rods to seal a hollow interior thereof and prevent dust accumulation therein; and stacking the encased package with other similarly encased packages of said rods such that the packaged rods rather than the synthetic film encasements provide support for the stacking.

4,250,688
METHOD AND APPARATUS FOR INSERTING FILLED, BAG-LIKE CONTAINERS INTO BOXES, CARTONS OR THE LIKE

Ottmar Lingenfelder, Auf dem Kyberg 27, 8024 Deisenhofen, Fed. Rep. of Germany

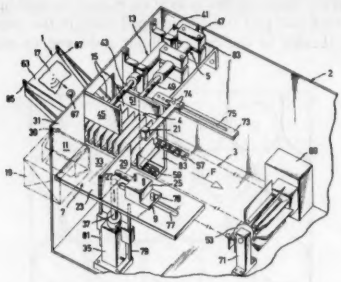
Filed Jul. 6, 1978, Ser. No. 922,318

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1977, 2730799; Jul. 7, 1977, 2730805

Int. Cl.[3] B65B *63/02, 57/20*

U.S. Cl. 53—438 68 Claims

1. A method for inserting filled bag-like containers into despatch or display boxes, cartons or the like, comprising the steps of feeding the containers to a conveying system which has a plurality of compartments for receiving the containers, each compartment extending transversely to the conveying direction, conveying the containers to an ejector station, ejecting a preselected number of containers at the ejector station from said compartments to a buffer store where initially the containers are loosely arranged with their flat sides adjacent to one another, subsequently pressing the containers in the buffer store closely against each other wherein pressure is applied to the bag-like containers by a movably mounted thrust plate in a direction normal to the flat sides of said containers, moving the tightly packed containers into a position out of the direct range of action of an ejector means directly in front of the opening of a carton to be filled and loading the tightly packed containers



into the opened carton by a loading plate in a direction parallel to the flat sides of said containers.

4,250,689
PACKING DEVICE

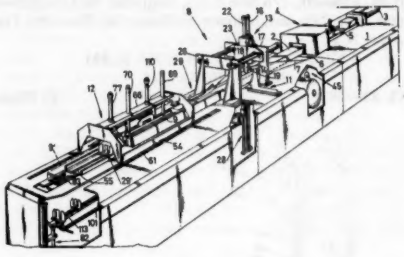
Philippe van Cutsem, Brussels, Belgium, assignor to Conorelec, Uccle, Belgium

Filed Mar. 28, 1979, Ser. No. 24,614

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1978, 2813793

Int. Cl.[3] B65B *35/30, 9/06*

U.S. Cl. 53—443 34 Claims



30. In a packing method, particularly for packing labels, which comprises discontinuously horizontally feeding labels on the edge thereof over a traversing feeding path, discontinuously pushing said labels over said path to form a continuous label column, selectively cutting-out at least some forms of the labels in column formation, separating label packages from the column by inserting at each stopping of the discontinuous pushing a separating member between two labels, feeding a packing material, cutting said packing material and applying said cut material over the separated packages so as to retain the labels assembled in each package, the improvement which comprises feeding the packing material before the separating of the labels between the label column and the traversing path, spacing the package separated from the label column during the stopping of the column by pushing a leading label package in a downstream direction from the column with the formation between the separated package and the label column of a space and thereby uncovering the packing material in said space, cutting said material at this time in the center of said space, inserting from the bottom up into said space an inserting member supporting an inset element for retaining the formed space and thereby folding upwards the cut packing material against the front face of the column and the back face of the separated package, removing the separating element and pushing on the label column and the inset element by said push member

thereby moving said column and imparting said pushing to the separated package and separating said inset element from said inserting member, folding the packing material over all of the other sides of the separated package as well as closing the completely wrapped package and removing said inset element from the closed package.

4,250,690

CONTAINER LOADING SYSTEMS

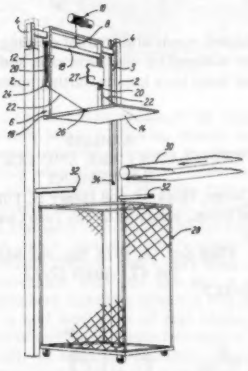
Peder Lorenzen, Risskov; Jacob A. Nielsen, Viby J., and Ole Prydtz, Egaa, all of Denmark, assignors to Kosan Crisplant A/S, Denmark

Filed Dec. 29, 1978, Ser. No. 974,488

Claims priority, application United Kingdom, Dec. 29, 1977, 54097/77

Int. Cl.³ B65B *5/10*

U.S. Cl. 53—475 **10 Claims**



1. A method of loading an open top container with parcels as supplied from a delivery position above the container for being dumped into the container, characterized in that the consecutive parcels are dumped onto an intermediate carrier member, said intermediate carrier member comprising a flap member rotatably attached to a frame member and hoisting means operably attached to both said frame member and said flap member, gradually lowering said intermediate carrier member into the container such that the parcels are dumped a relatively short distance from the delivery position to the carrier member or the top of the parcels already deposited thereon, arresting the downward movement of said frame member while permitting said hoisting means to continue to lower said flap member, whereby a rotatable movement is affected between said flap member and said frame member so that said carrier member in a lowered position is caused, by tilting or otherwise, to release the parcels and assume a position generally adjacent one or more sides of the container, the carrier member in this position finally being moved up from its engagement with the parcels and the container and returned into its initial parcel carrying position.

4,250,691

FEEDING APPARATUS

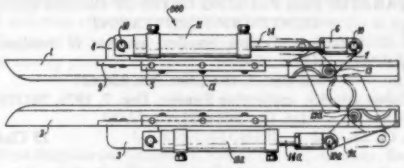
Steven Marshall, Mentone, Australia, assignor to ACI Operations Pty. Ltd., Melbourne, Australia

Filed Jun. 12, 1979, Ser. No. 47,936

Int. Cl.³ B65B *57/06, 43/12, 43/40*

U.S. Cl. 53—505 **9 Claims**

1. An assembly which simultaneously fills a plurality of webs of bags, separates filled bags and places them in outer containers, said assembly comprising a plurality of driven web conveyors which are each adapted to feed an elongated web of bags provided with a protruding feed member through which the bags may be filled, guide means provided in association with each web conveyor, said guide means adapted for guiding the movement of said feed members to a filling machine mounted above each said web conveyor, each said filling machine including gripping means for holding a feed member and being adapted to fill said bags through each feed member held by said gripping means, a separating device capable of separating filled bags from the web mounted above each said web conveyor downstream of each said filling machine, an elongated container feed conveyor running along the down-



stream ends of said web conveyors, a chute provided at the downstream end of each web conveyor, each said chute being adapted to direct filled bags provided by said web conveyor to drop therethrough under gravity into outer containers provided by said container feed conveyor and pusher means provided at the downstream end of each web conveyor, each said pusher means acting to push each outer container onto an elongated container outlet conveyor which runs substantially parallel to said container feed conveyor.

4,250,692

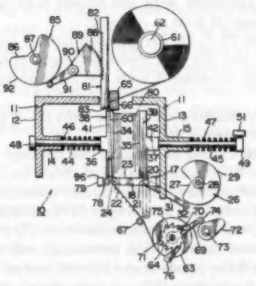
APPARATUS FOR BINDING PAPER SHEETS

Isamu Uchida, Tokyo, Japan, assignor to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1978, Ser. No. 972,209

Int. Cl.³ B65B *13/20, 13/32, 27/08*

U.S. Cl. 53—528 **7 Claims**



1. An apparatus for binding easily foldable paper sheets which comprises:

a paper sheet supporting plate for supporting thereon paper sheets to be bound;

a pair of confronting gripping plates disposed above the paper sheet supporting plate and horizontally movable between one position where the paper sheets are set between said gripping plates and another position resiliently gripping paper sheets therebetween where the paper sheets are bound, each gripping plate being formed on an inner surface thereof with a groove;

means for supplying binding tape to said gripping plates;

means for horizontally moving the gripping plates to resiliently grip paper sheets therebetween while binding tape is received in one groove of one gripping plate between said one gripping plate and the paper sheets to cover paper sheets at top and bottom edges thereof with binding tape;

a tape application lever disposed above the pair of gripping

plates and movable vertically to push binding tape into the groove of the other gripping plate between said other gripping plate and the paper sheets whereby the paper sheets are wrapped with binding tape; and

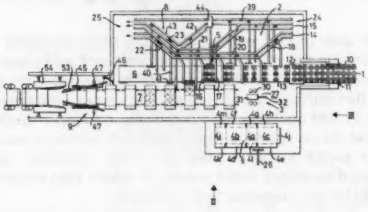
bonding and cutting means for bonding wrapping ends of the binding tape and cutting the binding tape to separate a wrapping end of the binding tape from a supplied end of the binding tape.

4,250,693

APPARATUS FOR PACKING UNITS OF GOODS UNDER CONTINUOUS MOVEMENT

Nils E. Andersson, Orebro, Sweden, assignor to Sundpacma Aktiebolag, Malmo, Sweden

Filed Dec. 7, 1977, Ser. No. 858,427
Claims priority, application Sweden, Dec. 7, 1976, 7613752
Int. Cl.[3] B65B *35/44, 11/12*
U.S. Cl. 53—543 **15 Claims**



1. Apparatus for executing the method for packing of unit of goods (5) in so called wrap-around-packages under continuous movement, whereby the package (4) is successively wrapped around the unit of goods and is sealed, characterized in that the apparatus generally comprises

means (2) for continuously collecting units (5) of goods to be packed,

means (3) for formation of a plain package blank (4) to a package container with one sloped wall, which is completely open at least at one side,

means (6, 16, 17, 7, 34, 35) for continuously feeding units (5) of goods and the preformed package containers (4) in a continuous movement with the same speed and side by side,

means (8) for pushing each of the units (5) of goods into one package container (4), and

means (9) for closing and sealing the package containers (4) which are filled with units (5) of goods further characterized in that means for continuously collecting units (5) of goods (1) comprises a conveyor (1) for continuously feeding the goods (1), a second conveyor (7) moving with a higher speed than the first mentioned conveyor (10) and onto which the goods is one by one pushed from the first mentioned conveyor (10), whereby the pieces (1) of goods are separated from each other in the moving direction, and the said means comprises at least one stop bar (16) moving at higher speed than the first mentioned conveyor (10), which stop bar (16) reduces the speed of the pieces of goods and makes a collection of a unit (5) of goods comprising one or more pieces of goods (1) possible.

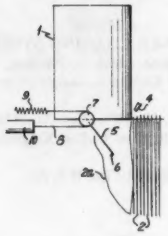
4,250,694

ARRANGEMENT FOR OPENING PLASTIC BAGS IN AUTOMATIC PACKAGING MACHINES

Tzur Rochman, 35 Hachashmonaim St., Tel-Aviv, Israel

Filed Jun. 6, 1979, Ser. No. 46,203
Int. Cl.[3] B65B *43/36*
U.S. Cl. 53—572 **8 Claims**

1. An arrangement for opening a stack of bags and retaining each bag in fully open position until goods are allowed to drop into said bag, said arrangement comprising funnel means for the supply of goods to be bagged, an air jet source comprising an air nozzle, a stack of bags stored vertically and below the goods supply with the outer lip of the outermost bag in the stack projected under the air nozzle, a hoop of generally semi-circular configuration pivotally mounted in a supporting mechanism adjacent to the bottom of the funnel means and supply of said bags, means for pivoting the hoop through substantially 180° to grasp and open the outermost bag fully



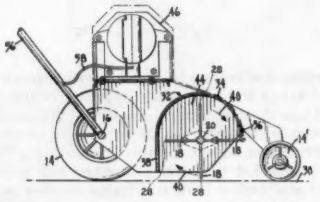
under the funnel means after partial opening of the outermost bag has been initiated by said air nozzle, and return means for bringing said hoop back into its starting position after filling of the bag.

4,250,695

POWERED LAWN CARE AND CULTIVATING IMPLEMENT

Robert C. Comer, Hopkins, and Henry B. Tillotson, Minneapolis, both of Minn., assignors to The Toro Company, Minneapolis, Minn.

Filed Sep. 18, 1978, Ser. No. 943,207
Int. Cl.[3] A01D *57/12*
U.S. Cl. 56—12.7 **9 Claims**



1. A debris reduction, lawn raking, and cultivating device, comprising:

a frame;

a plurality of ground engaging wheels rotatably mounted on said frame, said wheels defining generally parallel planes of rotation;

a generally horizontal shaft rotatably mounted to said frame, said shaft having an axis generally transverse to the planes defined by said wheels;

a plurality of filament members, each having a cross-sectional diameter of between 0.040 and 0.125 inches and at least partially composed of nylon, said filaments being generally equal in length, and spaced at equal intervals axially along said shaft with axially adjacent filaments angularly spaced from one another, said filaments extending from said shaft so that equal portions terminating in free ends extend radially from said shaft upon rotation of said shaft;

a housing mounted to said frame extending the length of, and generally parallel to, said shaft, said housing having an arcuate portion above said shaft radially spaced from said free ends of said portions of said filaments, and front and rear generally vertical planar extensions from said arcuate portion radially spaced from said free ends, said front generally vertical planar extension being shorter in length than said rear generally vertical planar extension;

a motor generating rotational movement;

transmission means conveying the rotational motion generated by said motor to said shaft; and

handle means for transmitting directional control to said device during its movement over a ground surface.

4,250,696

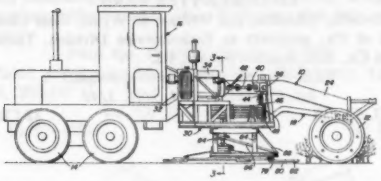
BRUSH AND MESQUITE CUTTER

Jack J. Hash, Box 489, Crosbyton, Tex. 79322

Filed Apr. 3, 1979, Ser. No. 26.734

Int. Cl.³ A01D *14/04*

U.S. Cl. 56—14.7 **5 Claims**



1. In combination with a road grader of the type including front steerable wheels and rear driving wheels as well as a blade support frame mounted between the front and rear wheels and vertically adjustable and also tiltable about a front to rear extending axis, a brush and mesquite cutter supported from said frame, said cutter including a multi-bladed horizontal rotary cutter head journaled from said frame for rotation about an upstanding axis, motor means drivingly connected to said cutter head for rotation thereof, said rotary head including a horizontal disc concentric with said axis and a plurality of elongated blade members including base and free ends, means pivotally attaching said base ends of said blades to spaced peripheral portions of said disc with the free ends of said blades projecting outwardly of said disc, said rotary head being dependingly supported from said frame, said frame including a hollow truncated semi-conical shield structure enclosing the forward half of said disc from above, the free ends of said blade members projecting outwardly beyond the lower marginal portions of said shield structure, said frame including a semi-circular structural member disposed about and slightly above the forward marginal portion of said disc, said frame including downwardly divergent brace members spaced about said axis and from whose lower ends said structural member is supported, said shield enclosing said brace members and the lower marginal portion of said shield being anchored relative to said structural member.

4,250,697

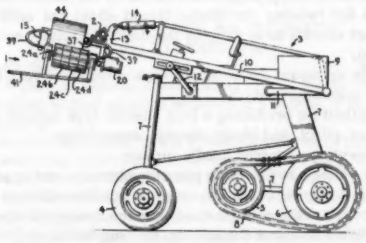
TASSEL PULLER

Thomas B. Bray, Rte. 1, Wapella, Ill. 61777

Filed May 31, 1979, Ser. No. 44,308

Int. Cl.³ A01D *47/00*

U.S. Cl. 56—51 **15 Claims**



1. A corn detasseling head comprising two opposed rollers mounted on a roller frame, alternating resilient ridges and grooves located at the circumferential perimeter of each roller and which extend longitudinally with respect to the rotational axis thereof, said rollers being adjacent to each other and producing sequential intermeshing of the ridges on each roller with the grooves of the opposing roller upon rotating both rollers, said ridges and grooves respectively being convex and concave in shape forming merging sinuous surfaces which repeatedly curve in and out smoothly to create a wavy nip which securely grasps tassels, and further including means for synchronized intermeshed rotation of said rollers at a speed and direction effecting propulsion of air downwardly at a rate sufficient to blow leaves on a corn stalk away from said rollers to normally prevent engagement of said leaves by said nip.

4,250,698

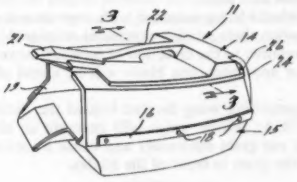
GRASS CATCHER

P. Paul Pappalardo, Greenwich, Conn.; Carle C. Conway, Leroy, and Frank Rodon, Batavia, both of N.Y., assignors to Eastern Molding International, Inc., Batavia, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,116

Int. Cl.³ A01D *35/22*

U.S. Cl. 56—202 **6 Claims**



1. In a grass catcher for a rotary lawn mower or the like comprising a relatively rigid closed, normally non-openable housing defining an elongated grass receiving and accumulating cavity between front and rear walls of said housing, said front wall having an inlet opening positioned to be in registry with the discharge chute of a rotary mower when attached thereto for delivery of air and grass clippings into said cavity, said inlet opening also serving as an opening for dumping accumulated grass clippings from said cavity when said grass catcher is not attached to a mower and when said housing is closed, a protruberance formed at the end of said housing opposite said inlet opening and extending rearwardly from said wear wall at a point above the lower wall of said cavity, said protruberance being formed in part by a rear surface aligned in the path of air flow from said inlet opening, said rear surface being spaced rearwardly of said rear wall, an air outlet formed in a side of said protruberance and out of alignment with said inlet opening for permitting air to exit from a side of said housing, said rear surface of said protruberance being interposed in the path of air through said housing from said inlet opening to said air outlet for intercepting the flow of grass and substantially precluding grass clippings from exiting from said air outlet, and a baffle interposed between said air outlet and said cavity contiguous to said rear wall for assisting in the preclusion of grass clippings from passing through said air outlet.

4,250,699

CLIPPING APPARATUS

Jören R. Hallberg, PL. 4707, S-761 00 Norrtälje, Sweden

Filed Apr. 9, 1979, Ser. No. 28,448

Claims priority, application Sweden, Apr. 14, 1978, 7804271

Int. Cl.³ A01D *55/26*

U.S. Cl. 56—235 **5 Claims**

1. A clipping apparatus for bushes and grass that is adapted

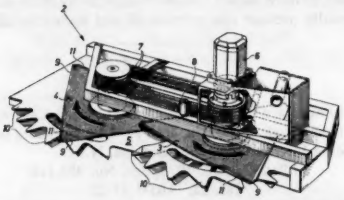
to be attached to a tractor or similar vehicle, said apparatus comprising:

(a) two generally planar blades having cutting edges,

(b) each blade being mounted for rotation about separate substantially vertical axes that are spaced far enough apart so that the cutting paths of the blades will overlap, said blades being mounted on mutually different levels,

(c) means to rotate said blades in the same direction,

(d) a stationary toothed member located immediately below each rotatable blade, each toothed member being adapted to cooperate with the rotatable blade immediately above it



to effect a clipping action on grass and bushes that come between said teeth,

(e) said blades being mounted with respect to the ground so that when their relative positional relationship is considered relative to the direction of forward movement of the cutting apparatus, one blade will be ahead of the other, and

(f) an upstanding wing located behind the cutting edge of each blade, which wings will generate an air stream to throw cut grass outwardly and cause a suction effect to raise the grass in front of the blades.

4,250,700

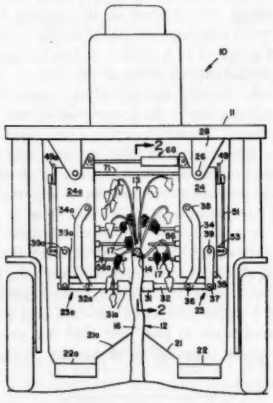
SHAKER-STRIKER VINE HARVESTER

Darrell C. Horn, and Gerald L. Claxton, both of Fresno, Calif., assignors to Up-Right, Inc., Berkeley, Calif.

Filed Jun. 15, 1979, Ser. No. 48,800

Int. Cl.³ A01D *46/00*

U.S. Cl. 56—330 **10 Claims**



1. A method of harvesting grapes from a row of trellis-supported grape vines having vertical trunks spaced apart along the row and vine growth extending from said trunks and trained along a horizontal trellis wire extending along said row, the method comprising:

moving along said row with relatively rigid shaker members and relatively flexible striker rods,

engaging the trunks with said shaker members at a level below said trellis wire and moving said shaker members back and forth transversly to said row to shake the engaged trunks while moving down the row,

holding each of said striker rods at one end thereof and repeatedly moving the free ends thereof towards and away from said row to strike repeatedly against and impart striking energy to the vine growth trained along said trellis wire while moving down the row.

4,250,701

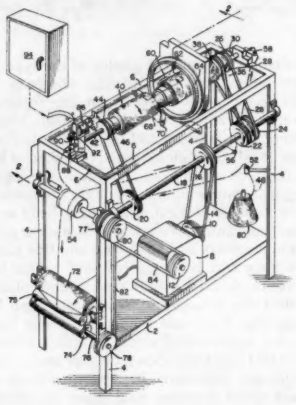
APPARATUS AND METHOD FOR MAKING LOOP CHENILLE TYPE YARN

Ira Schwartz, Villanova, and William K. Wyatt, West Chester, both of Pa., assignors to Techniservice Division, Textured Yarn Co., Inc., Kennett Square, Pa.

Filed Aug. 31, 1978, Ser. No. 938,425

Int. Cl.³ D02G *3/34, 3/36, 3/42*

U.S. Cl. 57—18 **22 Claims**



1. Apparatus for fabricating novelty type yarn from a core thread source, an effect thread source, and a binder thread source, the apparatus comprising:

(a) a spindle having a needle surface at one end thereof, the spindle including a passage which serves as a path for the core thread, the passage being in communication with the needle surface so that core thread may be fed through the passage and presented along the needle surface;

(b) means for supplying effect thread to the needle surface at an overfeed rate with respect to the core thread;

(c) nose piece means coaxial with the needle surface, a portion of the needle normally extending into the nose piece means so that the effect thread may be looped around the needle surface to form loops of effect thread;

(d) means for supplying binder thread to the needle surface and for twisting the binder thread about the core and effect threads so as to form the desired resultant novelty yarn;

(e) take up means for withdrawing the resultant yarn from the needle surface.

16. Method for producing a loop chenille type novelty yarn from core, effect, and binder threads, comprising:

(a) providing a tapered needle surface;

(b) providing a hollow nose piece member adjacent to and in coaxial alignment with the tapered needle surface so that a portion of the needle extends into the nose piece member to define an effect thread loop forming location;

(c) supplying a core thread alongside the needle surface;

(d) overfeeding effect thread to the needle surface and wrapping the effect thread about the needle surface to form

loops, the effect thread being overfed with respect to the core thread;

(e) supplying binder thread to the needle surface and twisting it about the looped effect thread and the core thread at the needle surface to form the desired loop chenille yarn; and

(f) withdrawing the loop chenille yarn from the needle surface.

4,250,702
MULTIFILAMENT THREAD AND METHOD OF FORMING SAME

Rudolf Gundlach, Lichtenau, Fed. Rep. of Germany, assignor to Frohlich & Wolff GmbH, Hess.-Lichtenau, Fed. Rep. of Germany

Filed Apr. 18, 1979, Ser. No. 31,295

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818386

Int. Cl.³ D02G *3/36, 3/40*

U.S. Cl. 57—251 **29 Claims**

1. A flexible thread comprising a plurality of individual filaments twisted together to form said thread, each said filament being composed of a polymeric base material, a partially cured synthetic resin, a hot-curing catalyst for said resin, each filament being encased by and being imbedded in said synthetic resin and catalyst so that adjacent filaments are intimately bonded to one another, said partially cured synthetic resin being stable at room temperature and being capable of being fully cured by subsequent heat treatment, said flexible thread being capable of being stored in incorporated into fabric form, prior to said subsequent heating.

10. A process for the manufacture of a flexible thread of the type comprising a plurality of filamentary components twisted together, wherein the filamentary components of the thread are each imbedded in and encased in a partially cured synthetic resin and a heat-curable catalyst, said process comprising, providing a thread of a type wherein the filaments are twisted together to form said thread, providing a plurality of rollers in a dipping bath containing said resin, dipping said thread into said bath under conditions of little tension while training said thread about said rollers, concurrently driving said rollers at different speeds so as to subject said thread to alternate pulling and pushing forces, subsequently partially curing said resin.

4,250,703
SWINGING DOOR PARTICLE SEPARATOR AND DEICING SYSTEM

Richard M. Norris, Stratford, and Joseph P. Murphy, Newtown, both of Conn., assignors to Avco Corporation, Stratford, Conn.

Filed Mar. 15, 1979, Ser. No. 21,422

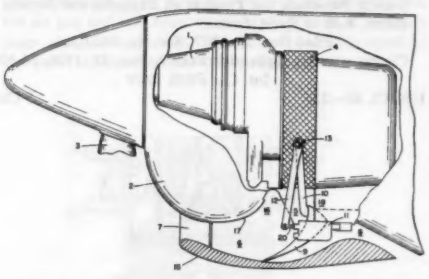
Int. Cl.³ F02G *3/00*

U.S. Cl. 60—39.09 P **4 Claims**

1. A particle separator and deicing system for the inlet of a gas turbine engine which is enclosed in a nacelle of an aircraft comprising:

a housing extending outward from the exterior of the nacelle and being constructed with an axially extending longitudinal duct; said duct having a forward facing inlet and a rearward facing outlet to allow for the flow of air; an opening is constructed in an interior wall of the housing adjacent to the nacelle, said opening communicating with the intake plenum of the gas turbine engine, and the duct, to form an entrance for the flow of air into the plenum;

a door mounted in the entrance to the plenum for movement between a first position and second position, where in the first position the door extends partially across the entrance to the plenum to force the airflow entering the plenum to bend through a substantial angle thereby causing particles of significant mass in the airflow to be separated by inertia



and exhausted through the outlet of the duct; and in the second position the door blocks the rearward facing exit to force substantially all of the air entering the duct to flow into the engine plenum; and

actuating means operatively associated with the door to move said door between the first and second positions.

4,250,704
COMBINED GAS-STEAM POWER PLANT WITH A FUEL GASIFICATION DEVICE

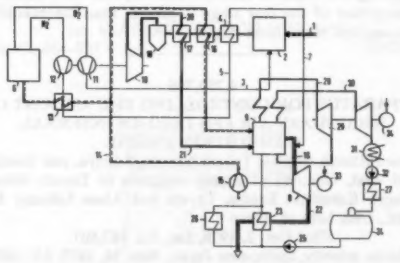
Hermann Brückner, and Werner Emsperger, both of Erlangen, Fed. Rep. of Germany, assignors to Kraftwerk Union Aktiengesellschaft, Mülheim, Fed. Rep. of Germany

Filed Aug. 8, 1979, Ser. No. 64,755

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1978, 2835852

Int. Cl.³ F02B *43/08;* F02C *3/28*

U.S. Cl. 60—39.12 **4 Claims**



1. Combined gas-steam power plant, comprising means for carrying out a gasification reaction at overpressure between oxygen and fuel fed to said gasification means, a heat exchanger and a charged steam generator disposed down stream of said gasification means in flow direction of fuel gas generated by said gasification means, a gas turbine receiving a flue gas stream from said steam generator, an air decomposition device having a first outlet line carrying oxygen to said gasification means and a second outlet line carrying nitrogen through said heat exchanger to said gas stream between said steam generator and gas turbine.

4,250,705

APPARATUS FOR THE CONNECTION BETWEEN TWO STAGES OF A SELF-PROPELLED ENGINE

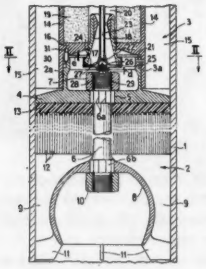
Hubert A. Zante, Teheran, Iran; Pierre B. Pascal, Lesigny, France; Michel E. Schilling, Epinay sur Sein, France, and Jackie G. Lamic, Saint Medard en Jalles, France, assignors to Societe Nationale des Poudres et Explosifs and Societe Luchaire, both of Paris, France

Filed Dec. 28, 1977, Ser. No. 865,026

Claims priority, application France, Dec. 28, 1976, 76 39278

Int. Cl.³ F02K *9/04*

U.S. Cl. 60—225 **5 Claims**



1. A device for joining the two stages of a self-propelled engine, such as a rocket or flare, which comprises a front stage, a rear accelerating stage, means for achieving the separation of the two stages after the combustion of the pyrotechnic charge of the rear stage is completed, means for carrying out the ignition of the pyrotechnic charge of the front stage, wherein a rear part of the front stage and a front part of the rear stage are assembled together for sliding axial movement therebetween, a temporary fragile connection under the effect of the ignition of the rear stage maintains a predetermined spacing between said rear part of the front stage and said front part of the rear stage, the rear part of the front stage includes means for igniting, after a predetermined delay, a pyrotechnic charge of the front stage, the front part of the rear stage includes mean for triggering the igniting means by contact therewith upon said spacing becoming closed when said temporary connection is eliminated and the connection between the front stage and the rear stage comprises means for holding the front and rear stages against relative rotation and wherein the maximum cross-section of the rear stage is greater than the maximum cross-section of the front stage.

4,250,706

APPARATUS FOR CONTROLLING THE AMOUNT OF SECONDARY AIR FED INTO AN INTERNAL COMBUSTION ENGINE

Tadao Mitsuda, Susono; Takeru Yasuda, Nagoya, and Toshimichi Asai, Obu, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisan Industry Co., Ltd., Obu, both of, Japan

Filed Oct. 2, 1978, Ser. No. 947,507

Claims priority, application Japan, Nov. 16, 1977, 52/136573

Int. Cl.³ F01N *3/10;* **F02M** *23/04*

U.S. Cl. 60—276 **9 Claims**

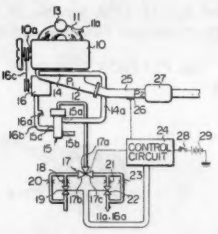
1. An apparatus for controlling the amount of secondary air fed into an internal combustion engine, said apparatus comprising:

means for generating a first electrical signal having two voltage levels which are selected in accordance with an air-fuel ratio condition of said engine;

a control unit, electrically connected to said first signal generating means, for generating second and third electrical signals at the negative edge and the positive edge of said first electrical signal, respectively, said second and third electrical signals having predetermined pulse durations;

a single air control valve having only one control chamber to which an absolute pressure signal is applied, said valve, responding to the pressure level in said control chamber, controlling the amount of secondary air to be fed into said engine;

a first switching valve means, electrically connected to said first signal generating means, for generating an absolute pressure signal by selectively communicating said control chamber of said air control valve with an absolute pressure source and with the atmosphere, in response to the voltage level of said first electrical signal;



a second switching valve means, electrically connected to said control unit, for increasing the cross-sectional area of a passage between said first switching valve means and the atmosphere, so as to cause a quick decrease of the level of said absolute pressure signal, when said second electrical signal is generated; and

a third switching valve means, electrically connected to said control unit, for increasing the cross-sectional area of a passage between said first switching valve means and the absolute pressure source, so as to cause a quick increase of the level of said absolute pressure signal, when said third electrical signal is generated.

4,250,707

EXHAUST EMISSION CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

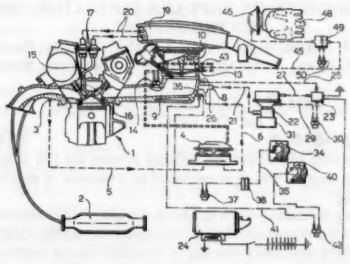
Francesco Cavallino, Pinerolo; Pasquale Martinez, Turin; Stefano Vaccaneo, Turin, and Michele Allione, Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Dec. 14, 1978, Ser. No. 970,075

Claims priority, application Italy, Dec. 23, 1977, 69897 A/77

Int. Cl.³ F02M *23/10;* **F01N** *3/10*

U.S. Cl. 60—293 **5 Claims**



1. In a spark ignition internal combustion engine having an exhaust emission control system including;

means for withdrawing a proportion of the exhaust gases from the exhaust manifold at a point corresponding to at

least one cylinder and for recycling said exhaust gases to the carburetor, and

means for admitting additional air directly into the exhaust manifold for the further combustion of any incompletely burnt fuel present in the exhaust gases in the exhaust system of said engine,

the improvement wherein,

said exhaust gas recycling means includes temperature sensitive valve means connected in circuit therewith, said temperature sensitive valve means being sensitive to the operating temperature of said engine and operating to prevent opening of said exhaust gas recycling valve means to effect recycling of exhaust gas except when the engine has attained a predetermined operating temperature,

further valve means connected to a point in the induction manifold of said engine downstream from the carburetor butterfly valve, said further valve means including,

means sensitive to the vacuum in said induction manifold, said further valve means operating to admit additional air to said induction manifold when said vacuum sensitive means thereof detects that the pressure in said induction manifold is below a threshold value, and

temperature sensitive valve means operating to inhibit the admission of said additional air when the temperature of said engine is below a predetermined threshold value,

control valve means connected in circuit with said further valve means, said control valve means being sensitive to energization of the starter motor of said engine and operating to close said further valve means when said starter motor is energized, whereby to prevent the admission of said additional air to said induction manifold when said engine is being started and thus to avoid the occurrence of explosions in the exhaust system due to said additional air, said carburetor being provided with a first pneumatic sensitive valve,

a control input to said first pneumatic pressure sensitive valve,

a duct connecting said control input to a third point on said induction manifold,

a temperature sensitive valve in said duct, said temperature sensitive valve operating to close communication between said control input and said induction manifold when the operating temperature of said engine is below a predetermined threshold thereby inhibiting operation of said valve, and

pneumatic delay means connected in series in said duct, said first pneumatic pressure sensitive valve operating to enrich the mixture supplied by said carburetor, when said engine operating temperature is above said predetermined threshold, with a delay, determined by said pneumatic delay means, after said control input of said valve senses a fall in the pressure in said induction manifold.

4,250,708

EXHAUST DOUBLE PIPE OF AN INTERNAL COMBUSTION ENGINE

Toshio Tanahashi, and Yasuo Fujioka, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 704,510, Jul. 12, 1976, Pat. No. 4,142,366. This application Dec. 20, 1978, Ser. No. 971,238

Claims priority, application Japan, May 18, 1976, 51/56025

Int. Cl.[3] **F01N** *7/00;* **F16L** *11/00*

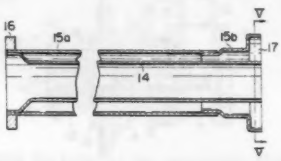
U.S. Cl. 60—322 **1 Claim**

1. A double-walled exhaust pipe for use with an internal combustion engine of a vehicle comprising:

an inner exhaust pipe having first and second ends,

an outer pipe assembly surrounding said inner pipe, said outer pipe assembly comprising first and second outer pipes, each having inner and outer ends, said inner end of said first outer pipe being coupled to said inner end of said second outer pipe,

said first and second outer pipes are spaced from and define a continuous air gap with the inner pipe over substantially the entire length of the first and second outer pipes except at the outer ends thereof, the inner end of one of said outer pipes has a reduced diameter portion such that said one outer pipe is slidably fitted in contact with and within the inner end of the other outer pipe with the inner ends of the first and second outer pipes spaced from the inner pipe via the air gap and said reduced diameter portion of said one outer pipe has an outside diameter substantially equal to the inside diameter of said other outer pipe,



a first mounting flange, said outer end of said first outer pipe being welded to said first mounting flange together with said first end of said inner pipe, and

a second mounting flange, the outer end of said second outer pipe being welded to said second mounting flange together with said second end of said inner pipe, said second outer pipe being not directly connected to said inner pipe.

4,250,709

IDLING ADJUSTING MECHANISM FOR INJECTION PUMPS, ESPECIALLY FOR DIESEL INJECTION PUMPS

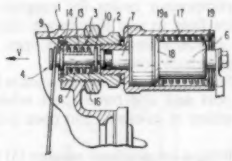
Ulrich Conrad, Ludwigsburg, and Gerd Niemeier, Stuttgart, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 13, 1978, Ser. No. 924,300

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1977, 2731913

Int. Cl.[3] **F03G** *7/06;* **F02D** *1/02, 5/00*

U.S. Cl. 60—527 **17 Claims**



1. An idling speed adjusting mechanism comprising:

an adjusting motor having an adjusting piston, said adjusting piston having an extension direction and operable to be extended with a temperature increase;

connecting means having a force applied thereto in said extension direction;

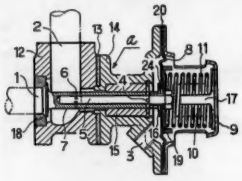
an intermediate member displaceable between relatively fixed abutment means and operatively connecting the adjusting motor to said connecting means;

spring means operable to displace the intermediate member in a direction opposite said extension direction.

4,250,710
EXHAUST GAS RELIEF VALVE DEVICE

Hideaki Matsuoka, Zama, and Nobuhiro Kondo, Matsudo, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 919,441
Claims priority, application Japan, Sep. 3, 1977, 52-118757[U]
Int. Cl.[3] F02B 37/00
U.S. Cl. 60—602 1 Claim



1. In a turbocharger system including an engine (21) having a cool compressed gas inlet (25) and a hot exhaust gas outlet (26); a turbine (22) having an inlet connected with the engine hot gas outlet, said turbine also including an outlet; a compressor (23) driven by the turbine, said compressor having an outlet connected with the engine inlet; and exhaust gas relief valve means including

(a) a housing (12,14) containing a valve chamber and including an outlet port (2) and a first inlet port (1) each communicating with said chamber, said outlet port being connected with said turbine outlet, and said first inlet port being connected with said engine hot gas outlet, a wall portion of said housing containing a through opening;

(b) valve means normally closing said inlet opening, said valve means including

(1) a valve member (7) having a stem portion slidably mounted for axial displacement in said through opening, said valve member carrying at the end thereof within said chamber a valve head portion; and

(2) spring means (11) biasing said valve member in one direction toward a closed position in which said valve head portion is seated in closed relation on said first inlet port; and

(c) means for displacing said valve member in the opposite direction against the biasing force of said spring means toward an open position relative to said first inlet opening, including

(1) means including a diaphragm (8) defining a diaphragm chamber opposite said through opening, said diaphragm being connected with the other end of said valve member; and

(2) means including a second input port (3) connected with said compressor outlet for supplying relatively cool pressure fluid to said diaphragm chamber to displace said valve member toward the open position; the improvement which comprises

(d) means affording continuous communication between said second inlet port and said outlet port when said valve member is in either of its closed and open positions, comprising

(1) means defining a longitudinal passage (5) in said valve stem portion;

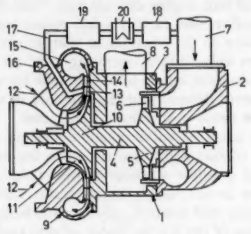
(2) at least one stem inlet opening (4) contained in said valve stem portion affording communication between said diaphragm chamber and said valve stem passage; and

(3) a plurality of radially arranged stem outlet openings (6) contained in said valve stem portion adjacent said through opening affording communication between said valve stem passage and said valve chamber, whereby the cool compressor output gases are conveyed in cooling relation from said diaphragm chamber to said valve chamber via said valve stem passage and via said radially arranged stem outlet openings, thereby to establish a low temperature fluid curtain adjacent said through opening.

4,250,711
METHOD AND APPARATUS FOR SUPERCHARGING AN INTERNAL COMBUSTION ENGINE

Gottlieb Zehnder, Kirchdorf, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Aug. 19, 1976, Ser. No. 715,677
Claims priority, application Switzerland, Aug. 29, 1975, 11225/75
Int. Cl.[3] F02B 33/44
U.S. Cl. 60—605 7 Claims



1. Apparatus for supercharging an internal combustion engine comprising:

a turbo-charger that includes a turbine driven by the exhaust gases from the the engine coupled to an air compressor which delivers charging air to the engine, feedback means for introducing a portion of the engine exhaust gases into the flow path of the charging air, the feedback means providing a feedback path terminating at a point within said compressor where the pressure of the charging air is lower than the pressure of the exhaust gases, the point within said compressor for introducing the exhaust gases being located downstream of the rotor blading when viewed in the flow direction, and wherein said feedback path includes an open-loop control means for controlling the amount of the exhaust gases which pass therethrough.

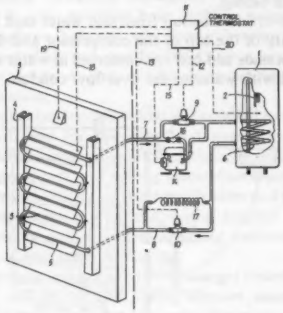
4,250,712
PLANT FOR THE PRODUCTION OF THERMAL ENERGY FROM THE SOLAR HEAT

Stefano Meloni, Fabriano, Italy, assignor to Meloni Igienico Sanitari S.p.A., Fabriano, Italy

Filed May 3, 1979, Ser. No. 35,774
Claims priority, application Italy, May 19, 1978, 49466 A/78
Int. Cl.[3] F25B 27/00, 27/02, 13/00
U.S. Cl. 62—2 3 Claims

1. A plant for the production of thermal energy from solar heat, comprising a solar header fed with a refrigerating fluid, a condenser within a user element, a series of ducts connecting a header to the condenser, said ducts including a first duct leading from the header to the condenser and containing a first electric valve, and a second duct leading from the condenser to the header and containing a second electric valve, a compressor in parallel relation with said electric valve in said first duct for bypassing said electric valve, and a capillary choke valve in said second duct in parallel with said second electric valve for bypassing said second electric valve, said plant providing a natural circulation circuit through said header and condenser and first and second electric valves, and a heat pump circuit through said header and condenser and compressor and capillary choke valve, and temperature-responsive means for opening and closing said electric valves thereby to open said natural circulation circuit through said electric valves when the temperature of a portion of said plant is above a predetermined

value and for closing said electric valves to establish said heat pump circuit through said compressor and choke valve and



actuate said compressor when said temperature is below said predetermined value.

4,250,713

APPARATUS FOR CONDUCTING LIQUID HELIUM BETWEEN A TRANSPORTER AND AN ELECTRIC MACHINE

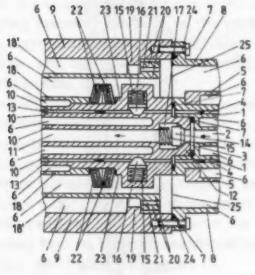
Willy Germann, Wurenlos, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 24, 1979, Ser. No. 6,126

Claims priority, application Switzerland, Jan. 26, 1978, 841/78

Int. Cl.³ F17C *7/02*

U.S. Cl. 62—55 **7 Claims**



1. An apparatus for providing selective fluid communication between a liquid helium transporter and an electric machine having a superconducting winding, comprising:

a shaft of the electric machine and a coupling of the helium transporter, wherein first passages are provided in the shaft and coupling for supplying liquid helium to the electric machine when the transporter and the electric machine are coupled, and wherein second passages are provided in the shaft and coupling for collecting warmed liquid helium from the electric machine when the transporter and electric machine are coupled;

pressure actuated valve means, provided in one of said first and second passages, for interrupting fluid communication when the pressure of the liquid helium falls below a predetermined value; and

centrifugal force actuated valve means, provided in one of said first and second passages, for interrupting fluid communication when the shaft speed falls below a predetermined value.

4,250,714

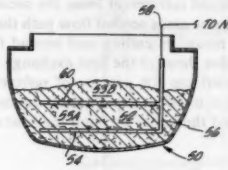
METHOD FOR COOLING METAL TURNINGS

Allan P. Covy, 2120 Paseo Del Mar, Palos Verdes Estates, Calif. 90274

Filed May 4, 1979, Ser. No. 36,144

Int. Cl.³ F25D *25/00*

U.S. Cl. 62—62 **31 Claims**



1. A method for reducing the temperature of a compacted pile of ferrous turnings located in a ship's hold, the pile comprising at least 1,000 long tons, at least a portion of the pile being at a temperature higher than a selected temperature, the method comprising the steps of:

(a) driving a plurality of pipes into the pile, each pipe having at least one orifice in its wall, at least a portion of the orifices being at a level below the elevation of the center of mass of the pile;

(b) providing a source of nitrogen;

(c) introducing a sufficient quantity of the nitrogen from the source of nitrogen into the pile through the pipes and orifices to reduce the temperature of substantially the entire pile to less than the selected temperature, at least a portion of the nitrogen being introduced through orifices at a level below the elevation of the center of mass of the pile and at least a portion of the nitrogen being introduced substantially laterally into the pile; and

(d) stopping introduction of nitrogen into the pile after the temperature of substantially the entire pile is less than the selected temperature.

4,250,715

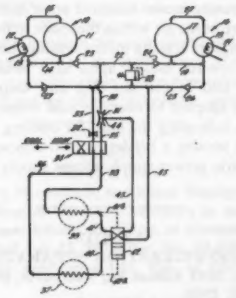
HEAT TRANSFER SYSTEMS

Frank W. Ratliff, P. Box 78, 1930 Zaventem 2 Luchthaven, Brussels, Belgium

Continuation-in-part of Ser. No. 19,478, Mar. 12, 1979, abandoned. This application Jun. 22, 1979, Ser. No. 50,971

Int. Cl.³ F25B *1/06*

U.S. Cl. 62—175 **9 Claims**



1. A heat transfer system comprising a refrigerant receiver including a pair of interconnected pressure vessels adapted to contain a supply of low boiling point liquid refrigerant, means for application of heat to the refrigerant in a first vessel of said pair with accompanying rise in pressure thereby causing a flow

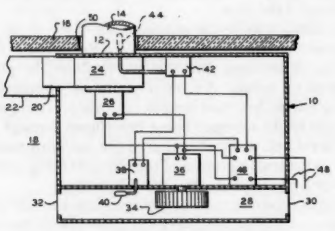
of vaporized refrigerant under pressure to the second vessel, conduit means connected to the second vessel of said pair for circulation of liquid refrigerant displaced from said second vessel by the pressurized vapor from the first vessel, said conduit means including a venturi device having an inlet connection to the second vessel and an outlet, a low pressure tap, an expansion valve, a heat exchange device downstream from the expansion valve, said conduit means establishing a first flow path for pressurized liquid refrigerant from the second vessel through the venturi device and a second flow path through the expansion valve, and means extending said second flow path from the expansion valve through the heat exchange device to the low pressure venturi tap for passage of refrigerant at a sufficiently low pressure to effect vaporization downstream of the expansion valve and thereafter through the heat exchange device.

4,250,716

AUXILIARY REFRIGERATION SYSTEM UTILIZING ATMOSPHERIC AIR

Howard E. Huffman, P.O. Box 137, Clinton, Mich. 49236

Continuation of Ser. No. 854,249, Nov. 23, 1977, abandoned.
This application May 24, 1979, Ser. No. 42,119
Int. Cl.³ F25D *17/00*
U.S. Cl. 62—180 **8 Claims**



1. A unitized auxiliary refrigeration system utilizing atmospheric air for coolers having thermally insulated walls defining a cooled space and cooled by a primary refrigeration system comprising, in a combination, a rectangular housing adapted to be mounted within the space to be cooled having an end wall and sidewalls, an atmospheric air inlet defined in one of said housing walls, an atmospheric air outlet defined in another wall of said housing, a fan within said housing having an inlet port communicating with said atmospheric air inlet and an outlet port communicating with said atmospheric air outlet, an electric motor drivingly connected to said fan, first electric temperature sensing means mounted upon said housing sensing the temperature of the air within the space to be cooled, second electric temperature sensing means sensing the atmospheric air temperature, control means upon said housing electrically connected to said motor and first and second temperature sensing means adapted to energize said motor upon said first sensing means indicating the need for cooling and said second sensing means sensing a predetermined atmospheric temperature, and electric power supply means supplying said control means.

4,250,717

REFRIGERATION APPARATUS

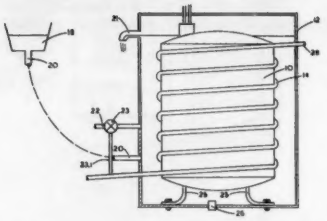
Cyril O. Stone, 3145 Adanac St., Vancouver, British Columbia, Canada (V5K 2N8)

Filed May 15, 1979, Ser. No. 39,104
Int. Cl.³ F25B *47/00*; F28D *5/00*
U.S. Cl. 62—279 **4 Claims**

1. In a refrigeration system employing a motor-compressor and a coil of condenser tubing which produces waste water obtained either as meltdown water resulting from an ice making cycle or as condensate from a refrigerant evaporator, apparatus for utilizing such waste water comprising:

(a) a water tank to enclose said compressor and coil of condenser tubing,

(b) an overflow conduit from said water tank located in the vicinity of the top of the compressor and the coil so the compressor and coil are immersed in water when the tank is full with water to the overflow conduit,



(c) waste water supply means located above the overflow conduit of said water tank for the supply of said waste water,

(d) a conduit to direct waste water from said waste water supply means to said water tank for cooling of the coil of condenser tubing and the motor-compressor

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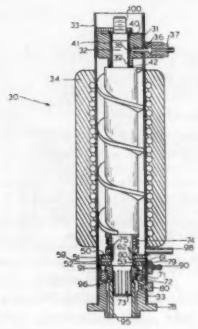
4,250,718

ICE MAKER CONVERSION APPARATUS AND METHOD

Ralph H. Brantley, 3823 Weyburn Rd., Durham, N.C. 27704

Filed Sep. 4, 1979, Ser. No. 71,990
Int. Cl.³ F25C *5/12*
U.S. Cl. 62—354 **5 Claims**



1. An ice making apparatus comprising, in combination:

(a) an upstanding evaporator assembly having an outlet at the upper end thereof;

(b) means for supplying water to said evaporator assembly;

(c) means for cooling said evaporator assembly including cooling means surrounding a vertical sleeve;

(d) an upstanding auger having upper and lower shaft ends mounted in said sleeve for scraping and delivering flaked ice to said outlet;

(e) an extruding head positioned on said auger upper shaft end and having a plurality of ice compressing and shaping passages therethrough, said extruding head having a centrally positioned, press fitted sleeve bearing mounted on said auger upper shaft end, having a plurality of peripherally-spaced, radially-directed threaded holes formed in outer surface portions thereof with at least a pair of such holes having threaded fasteners passing through said sleeve and acting to secure said extruding head thereto, having at least one of such threaded holes modified to

include an opening communicating through said sleeve bearing with said auger upper shaft end, having a threaded grease fitting extending outwardly from said sleeve mounted in said modified hole enabling lubrication of mating surfaces between said sleeve bearing and said auger upper shaft end, and having O-rings positioned at the upper and lower ends of said sleeve bearing to retain said lubrication;

(f) drive mechanism located below and coupled to said auger lower shaft end for operating said auger to force the flaked ice from said outlet into and through said passages;

(g) an auger support and sealing assembly mounted below said auger and above said drive mechanism and including:

(i) a compression spring and spring support assembly surrounding and mounting a sliding carbon seal surrounding said auger lower end;

(ii) an auxiliary seal mounted on said auger lower shaft end below said spring and spring support assembly and comprising an annular structure mounting a pair of vertically-spaced external O-rings at its upper and lower ends in press-fitted relation with the internal surface of said evaporator assembly sleeve, another O-ring mounted within said annular structure proximate the lower end thereof and engaging said auger lower shaft end, and having a horizontal passage formed through the body of said annular structure between said pair of external O-rings and above said internal O-ring and communicating through a mating hole in said evaporator assembly sleeve enabling any water collected above said annular structure internal O-ring to drain through said passage to be discharged through said hole in said sleeve;

(iii) a bearing housing having an upper cylindrical portion residing within and secured by threaded fastener means to said evaporator assembly sleeve, a lower flange portion secured to said drive mechanism and having a lubrication passage formed on the upper end thereof;

(iv) a bearing assembly mounted in the upper end of said housing approximate said housing lubrication passage and below said auxiliary seal and bearing the thrust imposed thereon; and

(v) a grease fitting mounted on and extending outwardly from the lower end of said evaporator assembly sleeve and communicating through said hole formed therein and through said lubrication passage with said bearing assembly to permit lubrication thereof; and

(h) an ice cutter mounted on said auger upper shaft end for rotation therewith and disposed above the upper end of said extruding head to break the extruded ice issuing from said passages into individual shapes.

4,250,719

HOUSEHOLD REFRIGERATOR HUMIDITY CONTROLLED PAN ASSEMBLY

Bernard J. Grimm, and Richard A. Dossett, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Sep. 4, 1979, Ser. No. 71,971

Int. Cl.³ F25D *25/02*

U.S. Cl. 62—382 **10 Claims**

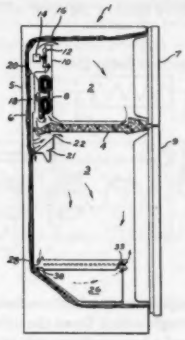
1. In a refrigerator, a humidity controlled pan assembly comprising:

a storage pan having an open top,

a stationary cover for receiving the pan,

a cover panel within the stationary cover and movable back and forth along the top of the pan, and

control means including a movable control mechanism and linkage means between the control mechanism and the cover panel that moves the cover panel back and forth



along the top of the pan in response to movement of the control mechanism.

4,250,720

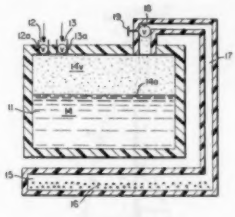
DISPOSABLE NON-CYCLIC SORPTION TEMPERATURE-CHANGERS

Israel Siegel, 351 W. 71 St., New York, N.Y. 10023

Filed Mar. 12, 1979, Ser. No. 19,899

Int. Cl.³ F25B *17/08*

U.S. Cl. 62—480 **5 Claims**



1. A disposable cooler consisting of a double-wall container,

water in an interspace between said walls,

at least a partial vacuum in said interspace to lower the boiling point of said water.

a second container,

a dessicant in said container,

a communication between the containers to allow a sorption of vapors generated by the evaporation of said water,

and means to reversibly close said communication to allow an unlimited storage of said disposable cooler.

4,250,721

HEAT PUMP

Gottlieb Wilmers, Neuenstadt, and Klaus Wissler, Kirchhausen, both of Fed. Rep. of Germany, assignors to Audi NSU Auto Union Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,450

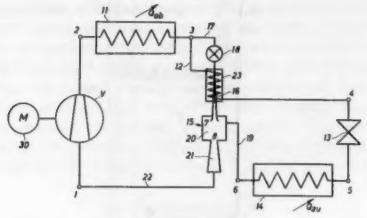
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1978, 2834075

Int. Cl.³ F25B *1/10*

U.S. Cl. 62—510 **8 Claims**

1. A heat pump having a refrigerant circuit comprising in series, a compressor, a condenser in which the refrigerant emits heat, an expansion valve, and an evaporator in which the refrigerant absorbs heat, an injector pump between the evaporator and the compressor, whose drive fluid is diverted from

the refrigerant circuit downstream of the compressor, the drive fluid conduit being tapped off from a point between the condenser and the expansion valve, and a heat exchanger for evaporating the drive fluid or the total refrigerant flow before



entry into the compressor, the heat exchanger having a heat-absorbing side through which flows the drive fluid or the total refrigerant flow, and a heat-emitting side through which flows the refrigerant before entry into the expansion valve.

4,250,722

TAKE-UP MECHANISM

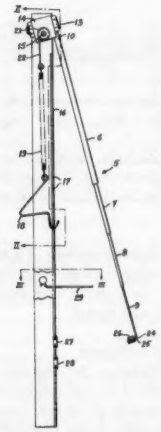
Max W. Betts, and John Flavell, both of Coventry, England, assignors to Courtaulds Limited, London, England

Filed Oct. 30, 1978, Ser. No. 955,652

Claims priority, application United Kingdom, Nov. 10, 1977, 46797/77

Int. Cl.[3] **D04B** *15/44, 27/12, 27/14*

U.S. Cl. 66—146 **4 Claims**



1. In a knitting machine having a yarn take-up arm mounted on a support member for pivotal movement about an axis extending transversely of the length direction of the arm, spring means to urge said arm to rotational movement in one direction around its pivot, a yarn guide at a location on the arm remote from the pivot and fixed yarn guides on said support member to lead yarn to and from said yarn guide on the take-up arm, the improvement comprising a structure:

(a) wherein said arm comprises:

(i) a light, stiff, tubular part extending from said pivot and constituting the major portion of said arm,

(ii) a normally straight, flexible end part constituting a minor portion of said arm and serving to absorb transient tensions in the yarn, said flexible end part being rigidly secured to said tubular part, and

(iii) said yarn guide being fixed on said straight, flexible end part close to the axis thereof;

(b) wherein said fixed yarn guides include two yarn guides located side-by-side on said support member and close to one another;

(c) wherein said pivoted take-up arm is positioned to guide said movable yarn guide along a path the extension of which passes in the region of said fixed yarn guides and the distance from said pivot to said movable yarn guide is at least equal to the distance from said pivot to the proximal one of said two yarn guides to said pivot but not greater than the distance from said pivot to the distal one of said two yarn guides; and

(d) wherein said mechanism also includes a stop fixed on said support member at a distance from said pivot which is less than or equal to the distance from said pivot to the proximal one of said two yarn guides, said stop restricting movement of said take-up arm towards said fixed yarn guides and defining a base position of said movable yarn guide at a distance from a line joining said fixed yarn guides greater than the distance between said fixed yarn guides, said stop being arranged to act near the junction of said major tubular part of said take-up arm and said flexible end part thereof, whereby said end part can flex and take-up transient changes in yarn tension when said arm is pulled into its base position by yarn threaded through one of said fixed yarn guides, through said movable yarn guide, and through the other of said fixed yarn guides.

4,250,723

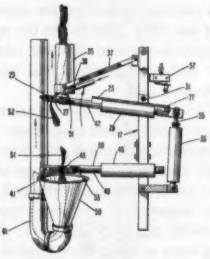
APPARATUS FOR SEPARATING HOSIERY

John D. Harrill, Shelby, N.C., assignor to Marvel Specialty Company, Inc., Hickory, N.C.

Filed Mar. 5, 1979, Ser. No. 17,600

Int. Cl.[3] **D04B** *15/88, 15/92*

U.S. Cl. 66—147 **17 Claims**



1. An apparatus to successively separate articles from a fabric in tubular form having a weakened portion between the articles to be separated, the tubular fabric being continuously produced on a circular knitting machine with separation being accomplished as the tubular fabric passes downwardly therefrom, the combination comprising:

a frame mounted below said knitting machine;

an integral gripping and separating means pivotally mounted on said frame about an axis substantially perpendicular to the path of movement of said tubular fabric; and

clamping means mounted on said frame downstream from said gripping and separating means;

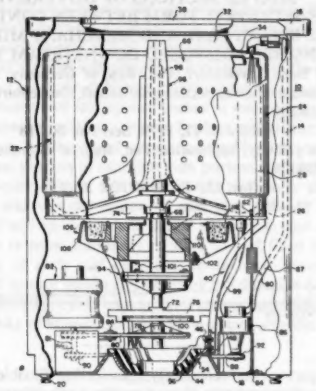
means for actuating said gripping and separating means and said clamping means for intermittently engaging said tubular fabric adjacent said weakened portion of said articles, said gripping and separating means pivoting about said axis to move away from said clamping means while gripping said fabric to exert a composite arcuate pulling force upstream away from said clamping means including a first force component parallel to the path of movement of said tubular fabric and a second force component per-

pendicular thereto to cause said article to be separated along said weakened portion.

4,250,724
SUSPENSION SYSTEM FOR TUB ASSEMBLY IN CLOTHES WASHING MACHINE

Ronald L. Altnau, Ripon, Wis., assignor to Raytheon Company, Lexington, Mass.

Filed Jan. 10, 1979, Ser. No. 2,450
Int. Cl.[2] D06F *37/24*
U.S. Cl. 68—23.2 **11 Claims**



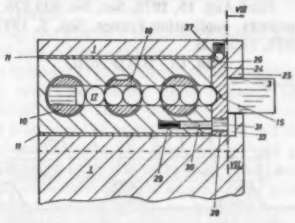
1. In a washing machine comprising a base and a wash tub assembly including an outer stationary tub and an inner clothes receiving tub mounted on a central shaft for rotation at relatively high spin speeds within said outer stationary tub, said shaft extending downwardly through the base wall of said outer tub and coupled via drive means to drive motor means mounted on said base, a suspension system for supporting said tub assembly in a relatively stable manner, said suspension system including in combination: a first rigid support cup having a predetermined shape joined to said washing machine base, a rigid support member coupled at a first end to said outer stationary tub, a second rigid support cup shaped complementarily to said first support cup and joined to said support member at a second end thereof, opposite said first end, said second support cup seatedly engaging said first support cup for pivotal movement with respect thereto, said first and second support cups supporting said tub assembly in a vertically oriented position, a plurality of resilient support members joined to and extending between said outer stationary tub and said base to maintain said tub assembly in said vertically oriented position, and a balance ring of solid construction having a predetermined weight and size, mounted on said central shaft as near as practical to the center of mass of said spinning tub and drive means, said balance ring being rotatable with said central shaft upon rotation of the latter in a first direction at relatively high speeds, said balance ring and said first and second support cups cooperating to stabilize said tub assembly when the clothes load in said rotatable tub is out of balance.

4,250,725
CONTROL DEVICE

Kurt Prunbauer, Herzogenburg, Austria, assignor to Evva Werk Spezialerzeugung von Zylinder- und Sicherheitsschlössern Gesellschaft m.b.H. & Co., Austria

Filed Feb. 5, 1979, Ser. No. 9,694
Claims priority, application Austria, Feb. 9, 1978, 918/78
Int. Cl.[3] E05B *9/04, 47/00*
U.S. Cl. 70—276 **10 Claims**

1. A control device for use with cylindrical locks, comprising a housing; a cylindrical plug arranged for rotation about its axis in said housing; a plurality of rotary control members arranged for rotation in said plug; a blind boring extending through said plug and crossing said rotary members, each of said rotary members defining a diametrical passage corresponding to said blind boring; means for bringing said rotary members into an aligned angular position in which said passages are in alignment with said blind boring; arresting means



connectable to said housing and facing said plug opposite to said blind boring; a plurality of arresting elements arranged in said blind boring and in said passages; and means for urging during said aligned position of said control members said arresting elements into a blocking position in which the outermost blocking elements engage said arresting means, said arresting means being operable to urge said arresting elements into said blind boring when said plug is rotated about its axis.

4,250,726
SHEET ROLLING METHOD

Matvei M. Safian, ulitsa Pisarzhevskogo, 3, kv. 2, Dnepropetrovsk; Eduard A. Babich, prospekt Metallurgov, 71a, kv. 49; Boris S. Dolzhenkov, ulitsa Aerodromnaya, 87, kv. 2, both of Kuibyshev, and Valery D. Esaulenko, ulitsa Platona, 12, kv. 1, Dnepropetrovsk, all of U.S.S.R.

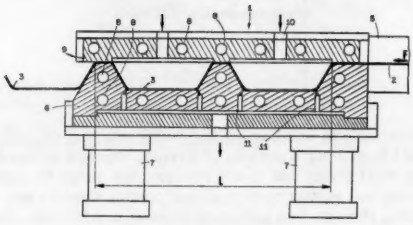
Filed Aug. 28, 1978, Ser. No. 937,074
Int. Cl.[3] B21B *9/00, 45/02, 45/06*
U.S. Cl. 72—38 **7 Claims**

1. Method of providing mirror and dull finishes, without etching, grinding or polishing, on the surfaces of rolled sheet metal products obtained by subjecting sheet metal billets to a plurality of reverse rolling operations in a rolling mill, wherein each roll operation includes rolling the sheet metal billets in a plurality of stands in said rolling mill with application of cooling emulsion to the sheet metal billets prior to each rolling step in each mill stand, which comprises directing a jet of a gas carrying solid hard spherical bodies of a material selected from the group consisting of glass, aluminum oxide, zirconium oxide, chrome-nickel alloys and ice of 40–200 microns diameter onto the surface of a hot sheet metal billet prior to each rolling step in each mill stand in each reverse rolling operation and prior to each application of the cooling emulsion to the sheet metal billet, and rolling the thus treated billet after each such treatment onto a stand of the rolling mill, whereby the surface obtains the desired finish.

4,250,727
PROCESS FOR THE PRODUCTION OF THERMOFORMED ARTICLES COMPRISED OF ALUMINUM-BASED AND MAGNESIUM-BASED ALLOYS

Jacques Baril, Etang-La ville; Jean-Yves Gaborieau, and Philippe Lheureux, both of Velizy, all of France, assignors to SCAL Societe de Conditionnements en Aluminium, Paris, France

Filed Aug. 15, 1978, Ser. No. 933,876
Claims priority, application France, Sep. 5, 1977, 77 27533; Nov. 10, 1977, 77 34521
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—46 **24 Claims**



1. A process for the production of articles from thin-walled blanks formed of aluminum, magnesium and alloys thereof, in a thermoforming mold, comprising the steps of:

forming a regular layer of artificial oxide on the surfaces of the blanks;

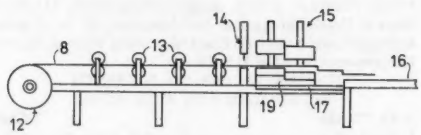
subjecting the blanks to a thermoforming process to include heating of the blanks and pressure forming of the heated blanks to deform the blanks against surfaces of the thermoforming mold to shape the blanks into said articles; and

removing the shaped blanks from the mold, the regular artificial layer acting to facilitate removal of said shaped blanks from the mold.

4,250,728
APPARATUS AND METHOD FOR FORMING STEPS IN PROFILED SHEETS OF MATERIAL

Eric G. King, Flat 1, 31 Carnot St., Rotorua, New Zealand

Filed May 4, 1978, Ser. No. 902,707
Int. Cl.³ B21D *11/18*
U.S. Cl. 72—177 **18 Claims**

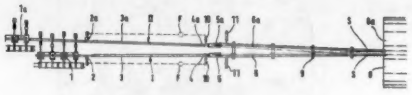


1. An apparatus for forming a step in a profiled sheet of material where the step is formed across the profile of the sheet as the sheet moves through the apparatus, the apparatus comprising a first die and a second die which together provide a first pair of opposing dies, and a third die and a fourth die which together provide a second pair of opposing dies, the second pair of dies being located adjacent the first pair of dies and positioned so that a step is provided between the second die and the fourth die, means moving the first die and the third die towards and away from the second die and the fourth die respectively, and independently of one another, said four dies being mounted for reciprocal movement as a unit on track means, means connected to said unit for reciprocally moving the same at a speed substantially equivalent to that of said sheet and in synchronization with said means moving said first die toward said second die to clamp said sheet therebetween before said means moving said third die toward said fourth die to clamp said sheet therebetween to form said step, and thereafter releasing said first and third die to permit the sheet to pass therethrough, the dies of each pair having on the opposing faces a profile corresponding to the profile of the sheet of material, and those adjacent faces of the dies forming the step in use having a profile which is the inverse of the profile of the sheet of material.

4,250,729
SYSTEM FOR SELECTIVELY TRANSFERRING FLEXIBLE AND RELATIVELY BENDING-RESISTANT SHAPED SECTIONS OF DIFFERENT CROSS-SECTIONAL FORM BETWEEN CONTINUOUS SMALL STRUCTURAL AND MERCHANT MILLS AND COOLING BEDS DISPOSED DOWNSTREAM THEREOF

Gerhard Berz, Dusseldorf, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 11, 1979, Ser. No. 56,518
Claims priority, application Fed. Rep. of Germany, Jul. 13, 1978, 2830806
Int. Cl.³ B21B *43/00, 39/161*
U.S. Cl. 72—251 **9 Claims**

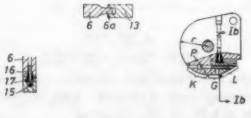


1. Apparatus for selectively transferring flexible and relatively bending-resistant shaped sections of various cross-sectional forms from two continuous small structural/merchant rolling mills having adjacent and approximately parallel rolling lines to cooling beds disposed downstream of the mills, the apparatus comprising stationary guiding roller tables downstream of the mills, pivotable deviator portions immediately downstream of the guiding roller tables, the deviator portions being short relative to the guiding roller tables, stationary distributor roller tables immediately downstream of the deviator portions, and pivotable roller tables downstream of the distributor roller tables and upstream of the cooling beds, whereby either one of the cooling beds can be fed simultaneously from both rolling lines, or each rolling line can feed a respective cooling bed.

4,250,730
DEVICE FOR THE EJECTION OF A SHAPED WORKPIECE AT THE MALE DIE ON A CROSS-FEED PRESS FOR NON-CUTTING METAL SHAPING

Hans Richner, Büsserach, Switzerland, assignor to Hatebur Umformmaschinen AG, Basel, Switzerland

Filed Mar. 9, 1979, Ser. No. 19,221
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—344 **8 Claims**



1. A device for forming a shaped workpiece, comprising fixed die means; movable die means; means mounting said

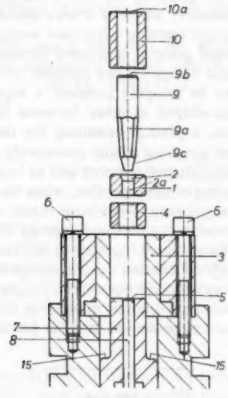
movable die means for movement towards and away from said fixed die means; drive means for said movable die means, said drive means comprising crankshaft means, and connecting rod means connecting said crankshaft means and said movable die means, whereby said movable die means executes a succession of reciprocatory strokes forming operating cycles; ejector means operatively associated with said movable die means; cam means operatively connected to said ejector means for controlling said ejector means for oscillatory movement; cam follower means engaging said cam means and connected to drive said ejector means in response to operation of said cam means, and means drivingly connecting said cam means to said crankshaft means; wherein said cam means has an axis of pivoting and means defining a cam contour which comprises (a) an arc concentric to said axis of pivoting and (b) a straight region joining said arc and following said arc serially in the direction of travel of said cam follower means along said cam contour during actuation of said ejector means in response to said cam follower means; said cam means further comprising first and second cam portions and means releasably connecting said second cam portion to said first cam portion for movement to allow repositioning of said second cam portion to shorten or lengthen said straight region of said cam contour whereby control of said ejector means can be effected so that said ejector means remains stationary relative to said fixed die means for a part of each said operating cycle of the movable die means and ejector means and whereby the duration of said part of each operating cycle is maintained independent of the length of the stroke of travel executed by said movable die means.

4,250,731

METHOD FOR PRODUCING TRIMMING DIES

Kurt H. L. Cremer, Ratingen, Fed. Rep. of Germany, assignor to Sack & Kiesselbach Maschinenfabrik, GmbH, Duesseldorf-Rath, Fed. Rep. of Germany

Filed Oct. 16, 1978, Ser. No. 951,634
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—354 **2 Claims**



1. The method for producing a cylindrical trimming die having a conical many-sided internal bore extending therethrough, for use in a screw trimming press having a cup-shaped cylindrical holder of a given inner diameter within which said trimming die is receivable, said method including the steps of:

preparing by machining a cylindrical blank having a uniform external diameter corresponding to the inner diameter of said cup-shaped cylindrical holder and an inner bore extending therethrough, said inner bore being uniformly cylindrical for at least the majority of the length thereof, and the height and external diameter of said blank corresponding essentially to the desired finished height and diameter thereof;

placing said prepared cylindrical blank into a cylindrical bore provided in a holder mounted on a press, said cylindrical bore having a uniform internal diameter substantially the same as the uniform external diameter of said blank, and said blank being so positioned within said cylindrical bore that the sidewall of said cylindrical bore engages and confines said cylindrical blank over the full height thereof;

introducing one end of a many-sided punch into said inner bore of said cylindrical blank;

placing a cylindrical guide sleeve about the other end of said punch, said guide sleeve being disposed between said cylindrical blank and a movable portion of said press which is arranged to engage said punch and the outer end of said guide sleeve, the inner end of said guide sleeve being engaged with said cylindrical blank, and the length of said punch exceeding the height of said guide sleeve by an amount corresponding to a desired predetermined insertion depth of the punch into said blank; and

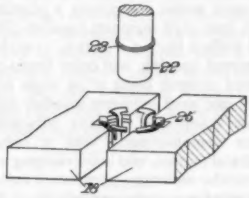
pressing said punch into said inner bore of said cylindrical blank while holding said blank stationary against movement axially of said cylindrical bore of said holder, until said guide sleeve is engaged by both said cylindrical blank and said movable portion of said press, whereby to produce within said blank a many-sided internal bore by cold deformation while the initial, finished external height and diameter of said blank are essentially preserved.

4,250,732

APPARATUS FOR MANUFACTURING CAGES FOR SET SCREWS

Richard Moryl, Maisons Laffitte, France, assignor to C.O.M.E.T. Compagnie de Materiel et d'Equipements Techniques, France

Division of Ser. No. 815,026, Jul. 12, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,452
Claims priority, application France, Jul. 16, 1976, 76 21888
Int. Cl.³ B21D *17/02*
U.S. Cl. 72—357 **2 Claims**



1. An apparatus for completing a metal cage for a prisoner threaded member-cage system comprising:

a matrix formed of two adjacent half shells adapted to be brought into contact with each other, each half shell having a semi-cylindrical recess, a semi-annular groove provided in the internal face and at least one indentation in the recess, such that the recesses of said two adjacent half shells form a cylindrical cavity for receiving a metal cage formed from a socket split longitudinally by two windows and provided with two bosses formed from two tabs cut out in the side of the wall of the socket which are received in the indentations of said half shells and the free ends of the two tabs and the side wall being bent back outwardly so as to form a discontinuous collar which rests on said matrix as the socket is received in the recesses;

a cylindrical punch having an annular rib projecting radially from the surface of said punch at an axial level corresponding to the level of the groove in said matrix; and

said two adjacent shells of said matrix being moveable

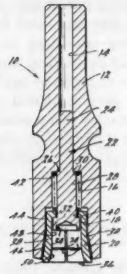
towards each other and away from each other after the metal cage has been inserted and located in said matrix and said punch has been inserted in the metal cage such that when the two shells are brought into contact with each other the cooperation between the rib of said punch and the annular groove of said matrix forms an annular rib projecting outwards from the socket wall of the metal cage.

4,250,733

FASTENING SYSTEM INCLUDING SEGMENTED SELF RELEASING ANVIL

John H. Ruhl, Tustin, and Richard D. Dixon, El Toro, both of Calif., assignors to Huck Manufacturing Company, Detroit, Mich.

Filed Jul. 13, 1979, Ser. No. 57,316
Int. Cl.³ B21J *15/36*
U.S. Cl. 72—391 **11 Claims**



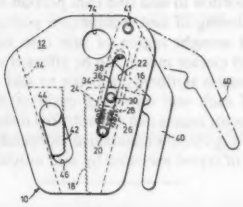
1. In a device for swaging a stump type fastener for clamping a plurality of workpieces together and including a pin and a tubular member adapted to be swaged onto the pin, said device swaging the tubular member onto the pin substantially by applying a force solely onto the tubular member, said device comprising a housing having a tapered opening at one end, anvil means located within said opening for relative movement therein, said anvil means comprising a plurality of separate anvil segments, said anvil segments together defining an outer frusto-conical surface having a contour complementary with that of said tapered opening, said outer frusto-conical surface and said tapered opening being at an angle providing a self releasing taper, said anvil segments together defining an inner swaging surface comprising an outer outwardly flaring bell mouth portion communicating with a reduced diameter straight cylindrical portion, said inner swaging surface selected to swage the tubular member a preselected amount to provide a desired clamping force on the workpieces via the set fastener, said inner swaging surface being of a length to confiningly embrace the tubular member for substantially its entire swaged length with said tubular member being swaged over a substantial portion by said straight cylindrical portion, a stop pin supported in said housing and having an enlarged head portion for supporting said anvil segments in their non-actuated position spaced from said tapered opening, spring means operative between said housing and said anvil segments for normally biasing said anvil segments axially outwardly against said head portion at a preselected preload, said anvil segments upon application on the tubular member being movable axially inwardly into said tapered opening with said outer frusto-conical surface engaging said tapered opening, anvil stop means cooperating with said housing and said anvil segments for limiting the axially inward movement of said anvil segments, said stop pin located at a preselected location to engage the fastener upon completion of the swaging at a position precluding said device from directly engaging the confronting one of the workpiece, said anvil segments having confronting side surfaces on adjacent ones of said anvil segments tapering radially inwardly away from each other whereby a slight axially extending gap occurs between adjacent ones of said anvil segments, said side surfaces terminating at their radially inner ends in axially extending edges which are radiused, said gaps receiving limited amounts of material from the tubular member upon swaging but providing readily visible lines extending axially for the length of the swage on the tubular member to provide observable inspection markings.

4,250,734

WIRE GRIPPING DEVICES

William W. Tinsley, Ross-on-Wye, England, assignor to Bartin Limited, Ross-on-Wye, England

Filed Mar. 29, 1979, Ser. No. 25,455
Claims priority, application United Kingdom, Mar. 30, 1978, 12387/78
Int. Cl.³ B21C *1/28*
U.S. Cl. 72—422 **9 Claims**



1. A releasable wire gripping device, for positive gripping of a wire, comprising a body portion, an opening in the body portion, a tapering passage within the body portion terminating in said opening, a wedge-shaped member slidable along said passage between a released position and a gripping position, two gripping surfaces disposed parallel to the axis of said passage, one of the gripping surfaces being provided on said wedge-shaped member, whereby a wire introduced into said passage through said opening when said wedge-shaped member is in its released position is gripped between the gripping surfaces when said wedge-shaped member is moved towards said opening into its gripping position, a lever operative to move said wedge-shaped member between its released and gripping positions, a pivotal mounting for the lever on the body portion, and coupling means operatively connecting the lever to said wedge-shaped member and so located relative to the pivotal mounting of the lever that, when the wedge-shaped member is in its gripping position, a thrust exerted on the wedge-shaped member towards said opening will tend to move the gripping surfaces closer together to increase their grip on the wire, and a thrust exerted on the wedge-shaped member away from said opening will not exert a couple on the lever in such a sense as to cause angular movement thereof to permit movement of the wedge-shaped member towards its released position.

4,250,735

PRESS ACTION MACHINES

Ian M. Spedding, Lytham, England, assignor to Hawkhead Bray & Son Limited, Halifax, England

Filed Jul. 14, 1978, Ser. No. 924,591
Claims priority, application United Kingdom, May 30, 1978, 24636/78
Int. Cl.³ B21J *13/04*
U.S. Cl. 72—455 **12 Claims**

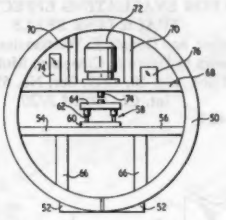
1. A press action machine comprising:

(a) a body comprising at least one annular member and at least one reinforcing beam extending chordally of said annular member and from side-to-side thereof;

(b) at least one operative element adapted for simple linear reciprocatory motion along a path;

(c) said operative element being mounted in a position in relation to said body such that said path of said linear reciprocatory motion of said operative element is substantially parallel with a diameter of said annular member and transverse to said reinforcing chordal beam; and

(d) at least one means for coacting with said operative element;



(e) said coacting means being mounted in a position in relation to said body in line with said path of said operative element;

(f) whereby, when said operative element moves toward and coacts with said coacting element resulting in a force being applied in opposite directions along said path to said annular member, said reinforcing chordal beam directly resists compression of said annular member in a direction perpendicular to said path of said operative element and thereby indirectly resists elongation said annular member in the direction of said path.

4,250,736

CLAMPING APPARATUS FOR TRANSMITTING A TRACTION FORCE

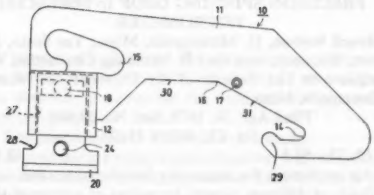
Teuvo O. Venäläinen, Luistelijantie 9 E, 70200 Kuopio 20, Finland

Filed May 2, 1979, Ser. No. 35,300

Claims priority, application Finland, May 4, 1978, 781376

Int. Cl.³ B21D *1/12*

U.S. Cl. 72—479 **14 Claims**



1. Clamping apparatus for transmitting a traction force to a metallic workpiece, such as an automobile body or the like, for deforming the same, comprising:

a frame including a clamping head housing portion having a recess formed therein;

a clamping head assembly including a pair of opposed clamping jaw portions selectively actuatable for movement within a plane into clamping relationship with the workpiece, said clamping head assembly being mounted for rotation within said housing portion recess in a manner such that said frame is continuously rotatable with respect to the clamping head assembly with respect to an axis which extends substantially normal to the plane of the clamping jaw portions and within a plane which extends in substantially the same direction as the plane of the clamping jaw portions; and

means for selectively locking said clamping head assembly in a fixed, immovable relationship with respect to said frame whereby the frame is rotatable within a plane which extends substantially in the same direction as the plane of the clamping jaw portions to a desired angular location with respect to said clamping head assembly jaw portions, said jaw portions being clamped to said workpiece, whereupon said locking means are actuatable to immovably fix said frame with respect to said clamping head assembly, so that a traction force can be applied to said workpiece through the clamping apparatus in any desired direction within a plane which extends substantially in the same direction as the plane of the clamping jaw portions to form said workpiece.

4,250,737

BATTERY POWERED GAS LEVEL INDICATOR

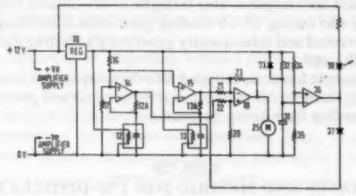
Timothy J. Biglin, Bristol, England, assignor to Horstmann Gear Group Ltd., Bath, England

Filed Jul. 19, 1979, Ser. No. 58,900

Claims priority, application United Kingdom, Jul. 19, 1978, 30325/78

Int. Cl.³ G01N *27/04*

U.S. Cl. 73—23 **4 Claims**



1. A gas level indicator incorporating two Taguchi-type gas sensing elements, one of which is to receive air to be sampled and the other of which is insulated therefrom, a comparator circuit receiving signals derived from the two elements, and an indicator actuated by the output of the circuit, wherein each sensing element is connected in series with a resistor, two amplifiers respectively supply a voltage across the element and its series resistor, and said voltage is in each case varied to maintain constant the partial voltage across the element alone, said voltage forming said signal in each case.

4,250,738

METHOD AND APPARATUS FOR MEASURING CHARACTERISTICS OF SMALL QUANTITIES OF LIQUID DROPPED ONTO A THERMOSTATICALLY HEATED TRANSDUCER, UTILIZING A WARM-UP AND MEASUREMENT PROGRAM

Albert Huch, Kugelgasse 1, D-3550 Marburg, Fed. Rep. of Germany

Filed Jun. 5, 1979, Ser. No. 45,853

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1978, 2824709

Int. Cl.³ G01N *25/02*

U.S. Cl. 73—15.4 **11 Claims**

1. A method of using an automatic meter which has a temperature-controlled sample dish for accommodating a sample dropped therein, when the sample dish includes a transducer which contacts the sample and can generate a reading in response thereto, comprising:

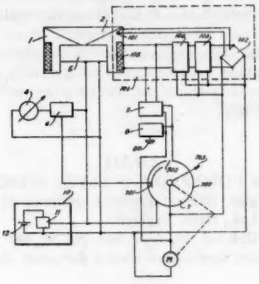
turning on the meter;

automatically turning on a temperature control to bring the sample dish to a desired temperature while preventing a reading from being generated;

automatically waiting for a first predetermined interval of time until the sample dish has reached the desired temperature;

automatically indicating that the first predetermined interval of time has elapsed by generating a reading;

automatically waiting for a second predetermined interval of time during which a sample may be dropped into the sample dish and during which the meter may be calibrated;



if a sample has been dropped into the sample dish, automatically waiting a third predetermined interval of time during which the sample is also brought to the desired temperature and during which reading generation is automatically prevented and subsequently generating a reading automatically; and

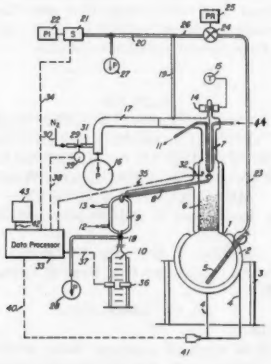
if no sample has been dropped into the sample dish, automatically turning off the temperature control and preventing a reading from being generated.

4,250,739

APPARATUS AND METHOD FOR TBP-DISTILLATION OF CRUDE OIL

Costandi A. Audeh, Princeton, and Richard N. Lovett, Woodbury, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Sep. 4, 1979, Ser. No. 72,741
Int. Cl.³ G01N *25/08, 25/14*
U.S. Cl. 73—17 A **5 Claims**



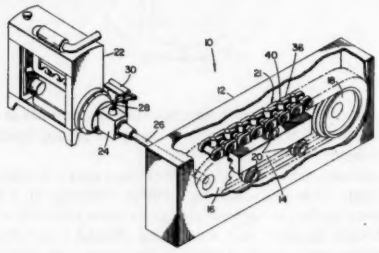
1. An improved method for determining the TBP distillation curve of a petroleum crude oil, which method comprises: distilling said crude oil at or near atmospheric pressure and up to a temperature equivalent to about 650° F. at 760 mm thereby forming an atmospheric residuum of said crude oil, and accumulating temperature-incremental volume data during said atmospheric pressure distillation thereby providing a data bank; establishing from said data bank the expected yield-temperature relationship up to a temperature equivalent to about 850° F. at 760 mm; vacuum distilling the first incremental volume of distillate from said atmospheric residuum; comparing at 760 mm the actual yield-temperature datum with the expected value to derive the deviation therefrom; and adjusting the vacuum in a direction to reduce said deviation.

4,250,740

METHOD FOR EVALUATING EFFECTIVENESS OF TRACK LINK SEALS

Joseph F. Wagner, and Donald E. Westemeier, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Aug. 10, 1979, Ser. No. 65,697
Int. Cl.³ G01M *3/20*
U.S. Cl. 73—40.7 **1 Claim**



1. A method for evaluating the effectiveness of an annular seal including a seal member comprising a relatively rigid, abrasion resistant material and installed in a track link assembly such as to prevent the flow of lubricant from and foreign material to a cavity defined by the assembly, comprising: adding a dyeing agent to the lubricant in the cavity, operating the track link assembly in a mud bath for a preselected period of time and removing the link assembly from the mud bath and disassembling the assembly for the purpose of observing the areas of the seal member colored by the dye to thereby determine if the seal member has any areas indicating that lubricant has leaked thereby.

4,250,741

PRECISION SPINNING DROP INTERFACIAL TENSIOMETER

L. Edward Scriven, II, Minneapolis, Minn.; Yee Seeto, Jurong Town, Singapore, and Carl D. Manning, Charleston, W. Va., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Apr. 30, 1979, Ser. No. 34,644
Int. Cl.³ G01N *13/02*
U.S. Cl. 73—64.4 **12 Claims**

1. An instrument for measuring interfacial tension between two fluids of different density by means of a drop of the less dense fluid surrounded by the more dense fluid, both fluids spinning together in gyrostatic equilibrium, said instrument comprising:

(A) a massive bearing housing adapted to be supported on a massive base having three-point leveling means,

(1) a pair of porous bushings tandemly aligned within said bearing housing,

(2) compressed air inlet and outlet ports in said bearing housing,

(3) a precision ground shaft journaled in said bushings,

(4) means for measuring the rotation of said shaft, and

(5) means for positioning said shaft axially in said housing,

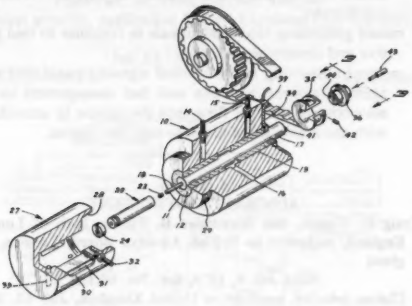
(B) a biprecision transparent isothermal sample tube rigidly secured at one end to one end of said shaft for precisely co-axial rotation therewith,

(1) sealing means closing the opposite end of said sample tube,

(C) a sample holder housing enclosing said sample tube,

(1) said sample holder housing removably secured to said bearing housing,

(2) aligned windows in said sample holder housing permitting viewing of said sample tube,



(3) temperature control gas inlet and outlet ports in said sample holder housing, and

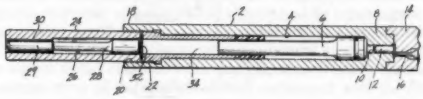
(D) power means for rotating said shaft and sample tube at a constant rotational speed sufficient to maintain gyrostatic equilibrium.

4,250,742

METHOD AND APPARATUS FOR TESTING HARDNESS OF HOMOGENEOUS MATERIALS

Rowland J. Kopf, Southington, Conn., assignor to Densicon Associates, Hamden, Conn.

Filed Nov. 9, 1979, Ser. No. 93,133
Int. Cl.³ G01N *3/48*
U.S. Cl. 73—82 **7 Claims**



1. A powder-actuated tool for providing a substantially constant driving force for driving a probe into a mass of homogeneous material to determine the hardness of the material, said tool comprising:

(a) a first piston slidably mounted in a barrel;

(b) means forming a compression chamber, said compression chamber containing a compressible fluid which is compressed to a predetermined driving pressure when said first piston is moved from a driving position within said barrel;

(c) means associated with said barrel for firing a powder charge to move said first piston from said driving position within said barrel;

(d) holder means operably associated with said barrel, said holder means having a bore for receiving the probe to be driven into the material being tested;

(e) a driving piston movably mounted in said holder means for driving the probe into the material being tested; and

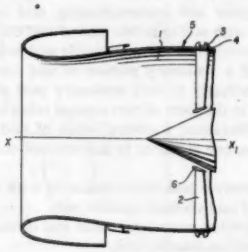
(f) means for delivering a substantially constant driving force from said compression chamber to said driving piston only upon attainment of said driving pressure in said compression chamber.

4,250,743

SUPPORT DEVICE FOR MEASURING INSTRUMENTS IN THE AIR INTAKE OF A TURBOJET

Paul J. Legrand, Vaux le Penil, France, assignor to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Oct. 25, 1979, Ser. No. 88,155
Claims priority, application France, Oct. 27, 1978, 78 31258
Int. Cl.³ G01L *7/00*; G01M *15/00*
U.S. Cl. 73—115 **4 Claims**



1. A support device for measuring instruments in the air intake of a turbojet, particularly pressure measuring instruments, comprising:

a plurality of support arms on which pressure measuring instruments are mounted at intervals along at least a part of the length thereof;

said support arms, extending within a plane perpendicular to the longitudinal axis of the air intake, and being mounted at one of their extremities on the turbojet housing;

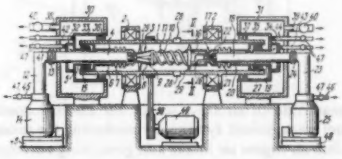
said support arms further being joined in pairs at their other extremities by means of a fusiform body and being mounted so as to converge in such pairs upon a radius.

4,250,744

DEVICE FOR CHECKING AN ELECTRICAL MACHINE COOLING SYSTEM

Alexandr A. Vinokurov, ulitsa Serdjukova, 6, kv. 58, Novosibirsk; Alexandr V. Zhukovsky, Naberezhnaya Chernoi Rechki, 12, kv. 69, Leningrad; Igor L. Zotov, ulitsa Rogova, 2, kv. 86, Moscow; Jury S. Popov, ulitsa Barienaya, 16, kv. 14, Novosibirsk; Iosif F. Filippov, ulitsa Pulkovskaya, 17, kv. 39, Leningrad, and Vladimir N. Ponedelko, ulitsa Serdjukova, 6, kv. 57, Novosibirsk, all of U.S.S.R.

Filed Apr. 26, 1979, Ser. No. 33,476
Claims priority, application U.S.S.R., Apr. 27, 1978, 2603801
Int. Cl.³ G01M *19/00*
U.S. Cl. 73—118 **2 Claims**



1. A device for monitoring the condition of the coolant of an electrical machine with cryogenic cooling at the output of a coolant feed unit having a stationary part made in the form of two coaxial tubes arranged one inside the other with a gap therebetween and a movable part comprising:

a hollow rotor having two ends, inside of which cryogenic temperature is maintained;

said coolant feed unit mounted inside said hollow rotor at one end thereof and coaxially therewith, said movable part being rigidly connected to said hollow rotor;

a coolant supply tank communicating with said stationary part of said coolant feed unit;

a coolant collecting chamber arranged inside said hollow rotor and connected to said movable part of said coolant feed unit;

a central tube of said coaxial tubes of said stationary part of said coolant feed unit mounted along the axis of said hollow rotor and communicating said coolant supply chamber with said movable part of said coolant feed unit;

a coolant transfer unit arranged inside said hollow rotor at its other end; a stationary portion of said coolant feed unit made identically to said stationary part of said coolant feed unit in the form of two coaxial tubes installed with a gap therebetween; a central tubes of said coaxial tubes whose one end is placed in said coolant collecting chamber;

a coolant receiver tank communicating with said stationary portion of said coolant transfer unit;

an intake member mounted on said end of said central tube of said coolant transfer unit;

at least two coolant transfer chambers for removing the gaseous coolant, each chamber being located at one of said ends of said hollow rotor; one said chamber communicating through said gap between said tubes of said coolant feed unit with said movable part of said coolant feed unit and the other chamber communicating through said gap between said tubes of said coolant feed unit with said coolant collecting chamber;

vacuum-tight housing of said chambers for removing the gaseous coolant;

means for measuring the quantity of liquid coolant connected respectively to said coolant supply tank and said coolant receiver tank.

4,250,745

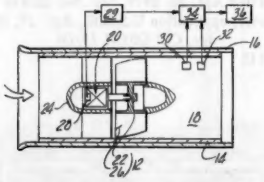
HIGH DYNAMIC RESPONSE MASS RATE FLUID FLOW SENSOR

Albert Blatter, Southfield, and John Miller, Auburn Heights, both of Mich., assignors to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 935,428, Aug. 21, 1978, Pat. No. 4,186,602. This application May 7, 1979, Ser. No. 36,463

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **3 Claims**



1. A mass rate of air flow sensor for internal combustion engine fuel management systems for measuring the mass rate of air flow into an engine air intake and generating corresponding electrical signals, the sensor comprising:

a sensor housing comprised of a length of circular section tubing fit within a portion of the air intake passage into said engine, said sensor housing receiving the air flow inducted into said engine;

a turbine rotor disposed in said sensor housing including a plurality of vanes mounted and configured to receive substantially all of said air flow and deflect the flow to impart a change in angular momentum to the fluid;

support means restraining said turbine rotor against movement in said housing in reaction to imparting said change in angular momentum to said fluid flow therethrough;

means sensing a reactive force on said turbine rotor support means by said change in angular momentum imparted to said fluid flow therethrough and generating reactive signals;

means sensing the density of fluid flowing through said sensor housing and generating density signals corresponding thereto;

means generating electrical signals in response to said reactive and density signals; and

means transmitting said electrical signals to said fuel management system, whereby said fuel management system may control the fuel flow into the engine in accordance with the mass rate of air flow into the engine.

4,250,746

AIRCRAFT INSTRUMENT

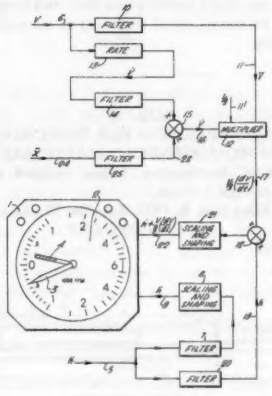
Craig D. Vassie, and Alexander B. Fisher, both of London, England, assignors to British Airways Board, London, England

Filed Jul. 9, 1979, Ser. No. 56,126

Claims priority, application United Kingdom, Jul. 13, 1978, 29767/78

Int. Cl.³ G01C *21/10*

U.S. Cl. 73—178 T **11 Claims**



1. In a vertical speed indicator instrument for an aircraft, said instrument comprising a graduated dial, a first pointer, and first control means for controlling said first pointer to indicate the vertical speed of the aircraft on said dial, said first control means including height rate responsive means responsive to a first input signal representative of the rate of change of height of the aircraft, the improvement wherein said instrument also comprises a second pointer movable independently of said first pointer, said second control means including said height rate responsive means and airspeed responsive means responsive to a second input signal representative of the true airspeed of said aircraft, said second control means controlling said second pointer and causing said second pointer to move in response to changes in the rate of change of the total energy of the aircraft as defined by the formula

$$\frac{d}{dt}\left(h + \frac{1}{2}\frac{V^2}{g}\right)$$

where h is the height and V is the true airspeed of the aircraft, said second pointer indicating the energy rate of change on said dial to the same scale as said vertical speed whereby said first and second pointers will track together under steady flight

conditions but will separate from each other in response to sudden changes in the airspeed of said aircraft.

4,250,747
HEAT METERS

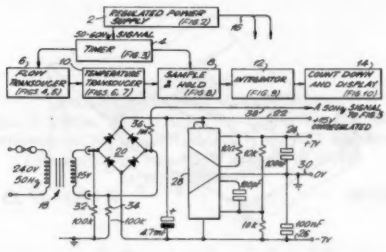
Kenneth V. Diprose, Bath, and Arthur S. Forbes, Yatton, both of England, assignors to ISS Clorius Limited, Bristol, England

Filed Oct. 31, 1978, Ser. No. 956,268

Claims priority, application United Kingdom, Oct. 31, 1977, 45242/77

Int. Cl.³ G01K *17/16*

U.S. Cl. 73—193 R **11 Claims**



1. A heat meter comprising electromagnetic induction means arranged to provide a measurement representative of rate of flow of fluid, said induction means comprising magnetic pole pieces arranged to be disposed on opposite sides of a conduit carrying said fluid so as to form an interpole gap therebetween, a pair of electrodes arranged to be disposed on opposite sides of said conduit so as to form an interelectrode gap therebetween, said interpole gap extending substantially perpendicular to said interelectrode gap, and means for generating a magnetic field between said pole pieces, said magnetic field generating means comprising an operation amplifier, field coil means magnetically connected with said pole pieces, and means for supplying as a feedback signal to said operational amplifier a signal that is proportional to current flow in said field coil means; means for obtaining a measurement representative of difference in temperature of the fluid between two spaced locations; and means for applying as an input signal to one of said measurement means a signal that is representative of the output signal of the other measurement means, whereby an output signal obtained from said one measurement means is representative of the amount of heat exchanged with the fluid between said two spaced locations.

4,250,748
FUEL VOLUME METER

Sven Wallqvist, Halmstad, Sweden, assignor to Haldex AB, Halmstad, Sweden

Filed Aug. 15, 1978, Ser. No. 933,899

Claims priority, application Sweden, Sep. 15, 1977, 7709364

Int. Cl.³ G01F *3/18*

U.S. Cl. 73—247 **12 Claims**

1. In a liquid volume meter having a housing (13) through which a volume of liquid to be measured passes, the housing formed with an inner chamber including an inlet (11) and an outlet (12) and having a drive means for driving a recording means in response to the liquid flow through the housing, said drive means comprising:

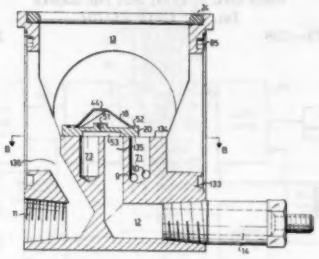
(a) first reciprocating means comprising a first pair of opposing pistons connected by a first rod located within a first bore in the housing;

(b) second reciprocating means comprising a second pair of opposing pistons connected by a second rod located within a second bore in the housing;

(c) rotary valve means for successively connecting the inlet and outlet to the first and second bores, the liquid flow through said housing as controlled by said valve means imparting a reciprocating motion to said first and second reciprocating means;

(d) transformation means connected to said first and second reciprocating means for converting the reciprocating motion into a rotary motion for driving the recording means;

(e) stroke adjusting means for adjusting a stroke of the reciprocating motion by limiting the stroke of one of the reciprocating means by limiting the stroke of the first rod



wherein the first and second rods are connected to the transformation means and the stroke of the second rod is unaffected by said stroke adjusting means and said first rod has an opening therein, the adjusting means including a conical member supported by the housing and projecting into said opening and means for adjusting the depth of the conical member projecting into said opening whereby the stroke of said first rod is adjustable depending upon the penetration of the conical member into said opening.

4,250,749
APPARATUS FOR THE PREPARATION OF MIXTURES IN VARIABLE QUANTITIES FROM A FORMULATION IN PARTS

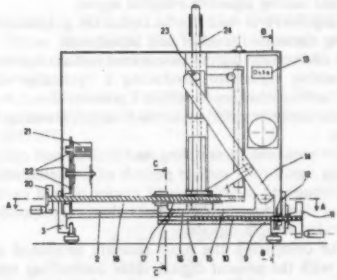
Jean Godat, Olivet, France, assignor to Fonderie & Ateliers des Sablons, Saint Jean le Blanc, France

Filed Jan. 8, 1979, Ser. No. 1,842

Claims priority, application France, Jan. 11, 1978, 78 00672

Int. Cl.³ G01F *23/26*

U.S. Cl. 73—290 R **11 Claims**



1. Apparatus for allowing the preparation of mixtures in variable quantities starting with a formulation given in parts of mixture, comprising a gauge, a track, a carriage on the track and a ramp on the carriage and wherein the vertical displacement of the gauge along a variable course is obtained by a transformation in magnitude of the displacement of the carriage in a substantially horizontal direction along the predetermined track which may be divided into equal parts, said transformation being obtained by an interdependent carriage ramp

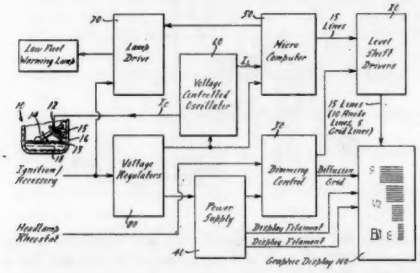
having an interdependent bearing of said gauge in which said carriage and said gauge define positions dividing respectively said track and said course in the same ratio.

4,250,750

LIQUID LEVEL MEASURING SYSTEM

Richard C. Martinec, Sterling Heights; James I. Berry, and Paul D. Stokes, both of Livonia, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Oct. 9, 1979, Ser. No. 83,012
Int. Cl.³ G01F *23/101*
U.S. Cl. 73—308 **22 Claims**



1. A liquid level measuring system comprising:

means for containing said liquid within a predetermined volume;

means within said containing means for sensing the level of said liquid therein and producing an analog signal indicative of said sensed level;

said level sensing means contains an electrical means having electrical characteristics which vary over a predetermined range in correspondence with a volume range as determined by the maximum and minimum levels that may be sensed within said containing means;

said electrical means is connected to receive a relatively stable electrical signal from a regulated power supply and to produce said analog signal having a value which varies over a predetermined range as a function of said sensed level, said electrical characteristic and said stable electrical signal;

means connected to receive said analog signal and to convert said analog signal to a digital signal;

means responsive to said digital signal for graphically displaying the sensed level of said liquid; and

wherein said converting means contains means responsive to said analog signal for producing a cyclically varying signal having a frequency within a predetermined range of frequencies corresponding to said range of analog signal values;

means for sequentially sampling and scaling said cyclically varying signal over sample periods of time that are each long enough to sample several cycles of said cyclically varying signal to produce digital values corresponding to said scaled sample signals;

means for comparing the most recently produced digital value with the present digital value controlling said display means to verify the accuracy of said most recent digital value;

means for adjusting said present digital value controlling said display when a predetermined number of respective most recently compared digital values are consistently different in value from said present digital value; and

means for storing said present digital value for control of said display; and

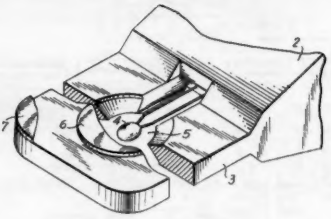
further wherein said display means depicts a bar graph comprised of a predetermined number of controlled display elements which when all are activated correspond to said maximum sensed level and whereby other levels are indicated by activating selected number of said display elements corresponding to controlling digital values from said scaling means.

4,250,751

HEAD FOR AN ELECTRONIC THERMOMETER

Albert Holzhacker, Joao Felipe Silva St., No. 192, Jardim Petropolis, Sao Paulo SP, Brazil

Filed Jul. 6, 1979, Ser. No. 55,455
Int. Cl.³ G01K *1/14, 1/16*
U.S. Cl. 73—362.8 **10 Claims**



1. A head for use with an electronic thermometer, comprising: a substantially thin elongate rod having conductor means extending therethrough which are electrically connectable with an electronic temperature indicating circuit, said rod having a substantially thin, self-supporting end portion extending therefrom, said thin end portion being formed of thermal insulating material and defined by a pair of opposed exteriorly facing side surfaces;

an element formed of thermal conductive material arranged in said end portion of said rod, said element having a surface portion which is exteriorly exposed at least at one of the said side surfaces of said end portion wherein an opening is formed in said end portion which opens at least at one of said side surfaces thereof; and

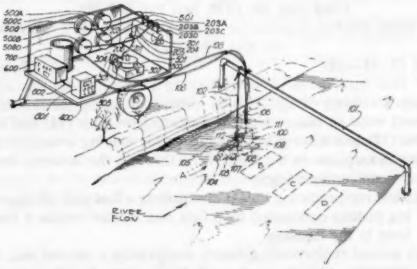
a temperature sensor member at least partially embedded in said thermally-conductive element in the opening of said end portion and electrically coupled to said conductor means.

4,250,752

CONTINUOUS FLOW CENTRIFUGATION METHOD OF SAMPLING

Edwin D. Ongley, R.R. 3, Bath, Ontario, Canada (K0H 1G0)

Filed Jun. 28, 1979, Ser. No. 52,957
Int. Cl.³ G01N *1/12*
U.S. Cl. 73—421 B **10 Claims**



1. A method for the quantitative recovery of solid particles suspended in a fluid from such fluid comprising pumping samples of the fluid, with the particles suspended therein, simulta-

neously from two or more different source locations and into a common chamber, said samples being mixed in said chamber as they are continuously fed thereinto and causing suspended particles to be evenly mixed in the fluid, causing said mixed samples to flow from the chamber into a sample splitter while the samples are pumped into the common chamber, causing turbulent mixing of said solid particles in said sample splitter whilst diverting a portion of the mixed samples from said splitter to a continuous flow centrifuge, and diverting the remaining portion to waste, the amount of mixed samples fed to the centrifuge being determined so that the quantity of solids collected in the centrifuge can be related thereto.

4,250,753

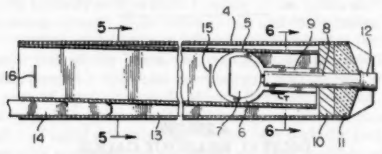
MOLTEN MATERIAL SAMPLER

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Continuation of Ser. No. 855,366, Nov. 28, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,455

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—425.4 R **16 Claims**



1. Means for connecting a lance and a device for obtaining a sample of hot liquid, said connecting means comprising wall structure forming an outer elongated housing structure, an inner casing fixedly secured in said housing structure for receiving such a device and forming in combination with said housing structure an elongated formation having an inclined surface for slidably accommodating an end of a lance.

4,250,754

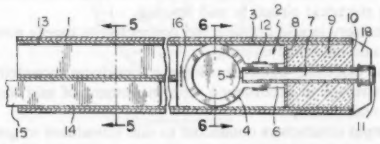
SAMPLER FOR A HOT LIQUID AND CONNECTOR THEREFOR

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Continuation-in-part of Ser. No. 855,365, Nov. 28, 1977, abandoned. This application May 9, 1979, Ser. No. 37,325

Int. Cl.³ G01N *1/12*

U.S. Cl. 73—425.4 R **42 Claims**



1. Means for connecting a lance and a device for obtaining a sample of liquid, said connecting means comprising wall structure forming an elongated housing having a front chamber for receiving such a device and a rear extremity, and an elongated formation mounted in said rear extremity for slidably engaging and holding a lance and extending alongside the longitudinal axis of said housing in an offset relation with respect to this axis.

4,250,755

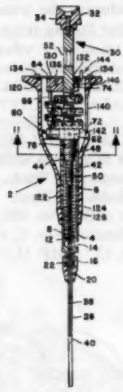
PIPETTE

James W. Kenney, West Chester, Pa., assignor to Drummond Scientific Co., Broomall, Pa.

Filed Oct. 22, 1979, Ser. No. 86,773

Int. Cl.³ B01L *3/02*

U.S. Cl. 73—425.6 **8 Claims**



1. A pipette comprising:

an elongated body having a threaded bore,

a tube secured to one end of the body,

a plunger extending through the body with one end extending into said tube to draw liquid into the tube and discharge it from the tube,

a first adjustable stop threaded in said bore and on said plunger for rotation with the plunger for adjusting its position in the bore, said stop member and said plunger being relatively movable with respect to each other on a common axis,

a second stop mounted on the plunger between said first stop member and the said one end of the body,

a spring biasing the second stop towards the first stop,

a counter driven by the rotation of the plunger, said plunger being movable on its axis relative to the counter.

4,250,756

APPARATUS FOR BALANCING A ROTATING BODY

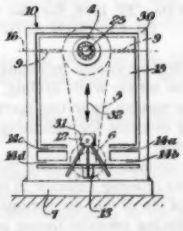
Otfrid Maus, Darmstadt, Fed. Rep. of Germany, assignor to Schenck-Auto-Service-Geräte GmbH, Darmstadt, Fed. Rep. of Germany

Filed Jun. 29, 1979, Ser. No. 53,254

Claims priority, application Fed. Rep. of Germany, Oct. 31, 1978, 2847295

Int. Cl.³ G01M *1/16*

U.S. Cl. 73—459 **11 Claims**



1. An apparatus for balancing a body of rotation mounted in

a bearing in two parallel balancing planes disposed perpendicular to the axis of rotation of the body having a balancing machine with bearing stand, means for mounting the body of rotation to be balanced and vibration transducers comprising a dynamic body mounting means mounted on a slotted integral plate, the integral plate having frame and central sections flexibly connected by narrow linking strips, some linking strips are constructed and arranged to transmit rotary vibrations of the body to the tranducer, the some linking strips being stressed in bending, other linking strips being constructed and arranged to transmit translatory vibrations of the body of rotation and to be stressed in tension or compression.

4,250,757

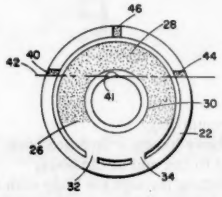
MOVABLE ELEMENT WITH POSITION SENSING MEANS FOR TRANSDUCERS

Richard A. Hanson, Woodinville, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Continuation-in-part of Ser. No. 905,927, May 15, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 92,240

Int. Cl.³ G01P *15/125*

U.S. Cl. 73—517 B **72 Claims**



1. An assembly for use within a transducer having a stator comprising:

a support member;

a movable member including at least one non circular pick-off area;

means for connecting said movable member to said support member permitting said movable member at least a limited degree of movement; and

at least one support element interposed between the stator and said support member wherein at least one edge of said support element is located in alignment with the centroid of said pick-off area thereby permitting that portion of said support member including said connecting means to rotate with respect to the stator with the axis of rotation passing through the centroid of the pick-off area.

4,250,758

COMBINATION FOR USE IN A ROTARY DRILLING SYSTEM WITH TORQUE METER

Robert W. Pitts, Jr.; Herbert A. Rundell, and Theodore W. Nussbaum, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1978, Ser. No. 972,623

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—650 **8 Claims**

8. In a rotary drilling system including a torque meter for measuring dynamic torque while drilling, in combination

a low pass filter passing up to one hertz,

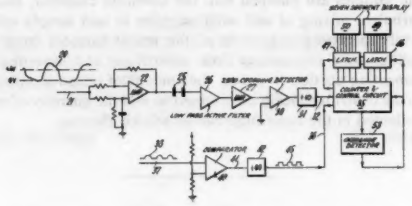
a zero crossing detector for indicating oscillations in said dynamic torque,

a divide-by-ten counter for dividing the number of outputs from said zero crossing detector in order to average the time period of ten of said oscillations,

means for producing periodic timing pulses at one second intervals,

a pair of binary coded decimal counters for counting by units and tens the number of said one second pulses between outputs from said divide-by-ten counter,

a pair of seven-segment display means for said units and tens counters, and



circuit means including latches for actuating said display means when said number of one second pulses between outputs from said divide-by-ten counter has averaged the said ten oscillations.

4,250,759

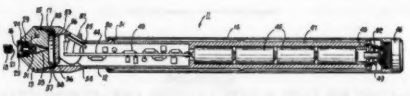
DIGITAL READOUT GAUGE

Otto Z. Vago, Burns, and Frank S. Irlinger, Nashville, both of Tenn., assignors to Scovill Manufacturing Company, Dickson, Tenn.

Continuation-in-part of Ser. No. 3,506, Jan. 15, 1979, abandoned, which is a continuation of Ser. No. 850,036, Nov. 9, 1979, abandoned. This application Nov. 21, 1979, Ser. No. 96,501

Int. Cl.³ G01L *9/08*

U.S. Cl. 73—723 **21 Claims**



1. A digital readout gauge, comprising, in combination,

a housing,

a chamber in said housing,

wall means in said chamber movable with changes of force on said wall means,

means to apply a changeable force on said wall means,

an electrical circuit in said housing,

a battery in said housing and connected to supply power to said electrical circuit,

said electrical circuit including a transducer mounted to be stressed in accordance with movement of said movable wall means,

output conductors connected to said transducer to generate an analog voltage thereacross upon stressing of said transducer,

an analog-to-digital converter connected to receive a voltage in accordance with te voltage on said output conductors to convert the analog signal of said transducer voltage output into a digital signal,

and a digital readout display connected to the output of said converter to display a digital value in accordance with the transducer voltage output.

4,250,760

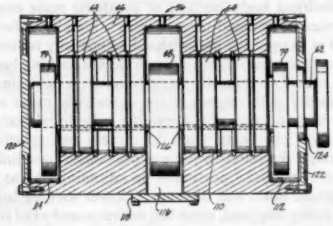
DRIVE ASSEMBLY FOR RESONANT APPARATUS

Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 973,163, Dec. 26, 1978. This application Apr. 2, 1979, Ser. No. 26,537

Int. Cl.[3] F16H *33/00*

U.S. Cl. 74—61 6 Claims



1. A resonant system comprising a beam, means supporting the beam intermediate the ends of the beam, the ends being free to move laterally with arcuate bending of the beam, and oscillator means secured to the beam at one end for inducing resonant vibration of the beam to achieve work output at the other opposite end of the beam, the oscillator means including a housing formed in the beam as an integral part thereof, at least two pairs of equal size axially aligned bearings mounted in the housing, a shaft journaled in the bearings, two outer eccentric weights of equal size mounted on the shaft with the two pairs of bearings positioned between the two outer weights, at least one inner eccentric weight having an aggregate weight equal to the sum of the outer weights mounted on the shaft between two pairs of bearings, the eccentric positions of each said weight being fixed and equal, and means for rotating the shaft and eccentric weight, whereby the eccentric forces exerted on each of the bearings is substantially equal.

4,250,761

ROTARY DRIVE MECHANISMS

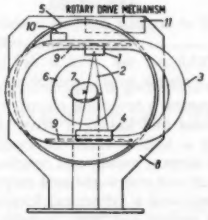
James A. Lodge, Maidenhead, England, assignor to E M I Limited, Middlesex, England

Filed Mar. 27, 1978, Ser. No. 890,675

Claims priority, application United Kingdom, Apr. 13, 1977, 15259/77

Int. Cl.[3] F16H *27/04*

U.S. Cl. 74—84 R 16 Claims



1. A rotary drive system, arranged to provide an intermittent rotation of a rotatable member, about an axis, relative to a fixed member, the system including: at least one drive member including two parts and means for mounting which allows each part to be capable of motion relative to the fixed member and capable of motion relative to the other part; coupling means, for engaging the rotatable member, attached to a first of the parts; and a countermass, attached to the second part; the total moments of inertia of, on the one hand, the rotatable member, including equipment mounted thereon, and, on the other hand, the countermass of said at least one drive member being related such that, on relative motion of the two parts with the coupling means engaged with the rotatable member, the rotatable member is imparted with a motion relative to the fixed member, substantially without transfer of reactive force from the drive member to said fixed member, while the countermass of said at least one drive member is imparted with an opposing motion thereto.

4,250,762

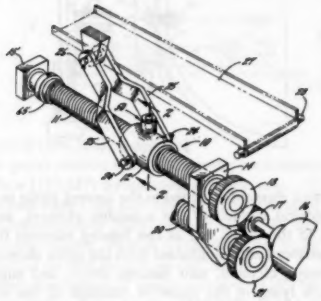
ACTUATOR HAVING A DRIVE SCREW AND A SELECTIVELY ROTATABLE NUT

John H. Weatherby, Pitman, N.J., assignor to Warner Electric Brake & Clutch Company, South Beloit, Ill.

Filed Mar. 30, 1979, Ser. No. 25,742

Int. Cl.[3] F16H *1/18*

U.S. Cl. 74—89.15 9 Claims



1. A linear actuator comprising a drive screw adapted to be rotated about its own axis, a nut threaded onto said screw, a housing enclosing said nut and defining a driven member, said housing being fixed against rotation and being free to move axially along said screw to a stop position, a hub disposed within said housing and telescoped non-threadably over said screw, a helical spring telescoped over said hub and said nut and coupled to rotate with said nut whenever said nut is rotated, selectively operable means for causing said spring to wrap down on or release said hub thereby to prevent or permit relative rotation between said hub and said nut, said hub having an axially facing surface engageable frictionally with said housing to prevent relative rotation between said hub and said housing, and means located at said stop position for reducing the frictional engagement between said housing and the axially facing surface of said hub thereby to permit relative rotation between said hub and said housing.

4,250,763

ROTARY TABLE DRIVE MECHANISM

Holmer Dangschat, Traunwalchen, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Mar. 22, 1979, Ser. No. 22,781

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1978, 2814612

Int. Cl.[3] F16H *13/02, 13/00, 13/12*

U.S. Cl. 74—208 28 Claims

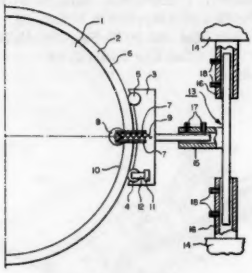
1. In combination with a rotatable element and an apparatus for angular measurement or angular adjustment of the rotatable element, the improvement comprising:

a first guide oriented tangentially to the rotatable element, the first guide attached to a rigid support body and having one degree of translatory freedom with respect thereto in the plane of rotation of the rotatable element;

a second guide oriented radially to the rotatable element, perpendicular to the first guide, the second guide attached to the first guide and lying in the plane of rotation of the rotatable element, the second guide having one degree of translatory freedom with respect to the first guide in the plane of rotation of the rotatable element, the degree of translatory freedom of the first guide being perpendicular to the degree of translatory freedom of the second guide;

a biasing element attached to the second guide to engage a peripheral surface of the rotatable element;

a drive element attached to the second guide to engage a peripheral surface of the rotatable element, and positioned to one side of the biasing element; and



a supporting element attached to the second guide to engage a peripheral surface of the rotatable element, and positioned to the other side of the biasing element from the drive element and equidistant with the drive element from the biasing element, said biasing, drive, and supporting elements lying in the plane of rotation of the rotatable element and arranged such that the vector sum of the forces applied to the rotatable element by the biasing, drive, and supporting elements is a substantially purely rotational drive force, said first and second guides cooperating with the biasing, drive, and supporting elements such that substantially no transverse forces are applied by the drive apparatus to the axis of rotation of the rotatable element.

4,250,764

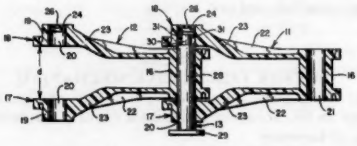
NON-METALLIC SPROCKET CHAIN HAVING QUICK DETACHABLE, TWIST-LOCKING PIVOT PINS

Glenn G. Grant, P.O. Box 12321, Columbus, Ohio 43212

Filed Mar. 23, 1979, Ser. No. 22,954

Int. Cl.³ F16G *13/02*

U.S. Cl. 474—207 **2 Claims**



1. A sprocket chain which includes a plurality of identical, longitudinally adjoining links pivotally connected to one another by quickly detachable pivot pins, wherein:

(a) each link comprises an integral, generally elongated, U-shaped body of synthetic resin composition formed with a pair of longitudinally extending side arms terminating at one end thereof in transversely spaced apart, but relatively aligned eye portions and connected at their opposite ends by an integral, tubular cylindrical yoke portion having a pivot pin-receiving bore extending therethrough, said eye portions being normally spaced apart a distance greater than the width of the yoke portion of said links and being resiliently flexible inwardly toward one another, each eye portion having a cylindrical pin-receiving bore extending therethrough and one eye portion of each of said links having an arcuate cam formed with an axially inclined bearing surface extending from the inner wall of its pin receiving bore and including a pin-locking recess; and wherein

(b) each of said pivot pins comprises an elongated generally cylindrical body portion of synthetic resin composition formed at one end thereof with a radially enlarged head and at its opposite end with a diametrically reduced, cylindrical terminal having a cam follower locking lug projecting radially outwardly therefrom, but terminating radially inwardly with respect to the cylindrical outer surface of the body portion of the pin, the cylindrical body portion of each pin being sized to closely but rotatively pass through the bores of the eye portions of one link and the bore of the yoke portion of an adjoining link to pivotally join said links, and the cam follower locking lug of each pin being disposed, upon full insertion and axial rotation of the pin in the eye portions of a link, to initially engage with the cam bearing surface of said link and to resiliently flex the eye portions of the link toward one another before reaching the pin-locking recess of said cam bearing surface, said cam follower locking lug, upon reaching said recess, permitting the eye portion of said link to resiliently snap outwardly to a position in which said locking lug is retained in said recess.

4,250,765

FORCE TRANSMITTING ARRANGEMENT

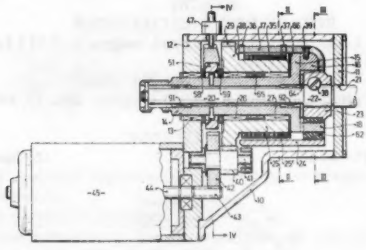
Bernd Niklaus, Rastatt; Manfred Braun, Bühlertal, and Roland Maier, Baden-Baden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,019

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1978, 2806307

Int. Cl.³ F16H *35/00*

U.S. Cl. 74—388 PS **16 Claims**



1. In a force transmitting arrangement, a combination comprising support means; a reversible electric motor mounted on said support means and having a drive shaft; said support means including a hollow shaft; an output shaft turnably mounted in said support means; and coupling means between said drive shaft of said motor and said output shaft; said coupling means comprising a cylindrical friction core having an outer peripheral surface and being turnably mounted in said support means, looped spring means wound about said peripheral surface, output entrainment means and input entrainment means movable relative to said output entrainment means to couple or uncouple said spring means with said peripheral surface, said input entrainment means including an arm extending over said looped means and being fixedly connected to said hollow shaft for turning therewith, said output entrainment means being fixedly connected to said output shaft and having a longitudinally extending slot to receive said arm of said input entrainment means arranged within said slot with lateral clear-

ance at each side of said arm, said looped spring means including outwardly bent ends extending into said clearances respectively, said output entrainment means having a traversly extending slot and spring elements arranged in said traversally extending slot, said input entrainment means being provided with a nose projecting into said traversally extending slot between said spring elements so that the two entrainment means are turned relative to each other only against the force of said spring elements.

4,250,766

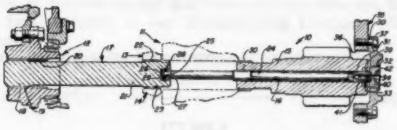
SHAFT PULLER

David J. Balzer, East Peoria, and James D. Sickinger, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 26, 1979, Ser. No. 6,820

Int. Cl.³ F16H *57/00*

U.S. Cl. 74—405 **13 Claims**



1. In a power drive assembly (10) having a rotatable driving member (12), a rotatable drive transfer means (14), a driven member (17) in selectively driven association with said driving member and in selectively driving association with said drive transfer means, wall means (38) spaced outwardly of said driven member and provided with an access opening (39), and a longitudinally fixed, rotatable final drive shaft (15) extending coaxially of said driven member to a position inwardly adjacent said access opening, said final drive shaft being driven by said drive transfer means, the improvement comprising:

positioning means (24) extending rotatably coaxially through said final drive shaft and being selectively adjustable through said access opening; and

means (21,26,28) responsive to adjustment of said positioning means (24) for positioning said driven member selectively in driven and non-driven association with said driving member and correspondingly in driving and nondriving association with said drive transfer means, said driven member being arranged to move into nondriving association with said drive transfer means prior to movement thereof into nondriven association with said driving member.

4,250,767

REMOTELY CONTROLLED REARVIEW MIRROR ASSEMBLY

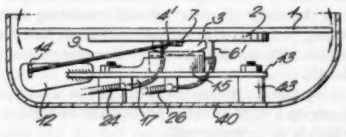
John Bottrill, Chichester, England, assignor to Britax (Wingard) Limited, Chichester, England

Filed Feb. 6, 1979, Ser. No. 9,897

Claims priority, application United Kingdom, Feb. 24, 1978, 7476/78

Int. Cl.³ F16C *1/10*; A47G *1/24*

U.S. Cl. 74—501 M **9 Claims**



1. A remotely controlled, rearview mirror assembly comprising a casing, a tiltable reflective member mounted on a fixed base in the casing, the reflective member being mounted for tilting movement about two mutually perpendicular axes and a clearance being provided between the peripheral edge or edges of the reflective member and the casing and a remote control connected by a linkage to the reflective member to cause said tilting movement, characterised in that the reflective member is anchored by a forked member to the base for the purpose of maintaining the clearance between the peripheral edge or edges of the reflective member and the casing, the forked member having arms pivotally connected to respective opposite sides of the reflective member and having a junction part pivotally connected to the base.

4,250,768

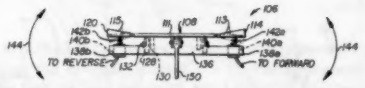
CONTROL PEDAL

Harold V. Hildebrecht, Cleveland, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

Continuation-in-part of Ser. No. 823,767, Aug. 11, 1977, abandoned. This application Jun. 12, 1979, Ser. No. 47,850

Int. Cl.³ G05G *1/14*; B60K *20/00*

U.S. Cl. 74—512 **6 Claims**



1. A pedal (106,156) comprising:

a main pedal portion (108,158) having a substantially planar surface (111,157) terminating at a first edge (107,161) and a second edge (109,163) opposite said first edge (107,161);

a first supplemental pedal portion (114,168) having a substantially planar surface (113,169) and being pivotally mounted on said first edge (107,161);

a second supplemental pedal portion (120,174) having a substantially planar surface (115,175) and being pivotally mounted on said second edge (109,163); and

means (142*a*, 142*b*, 200, 202) for maintaining said first and second portions (114,168,120,174) in a first position wherein said surface (113,169,115,175) of each of said first and second portions (114,168,120,174) is raised relative to said surface (111,157) of said main portion (108,158), and for permitting each of said first and second portions (114,168,120,174) to be urged to a second position wherein said surface (113,169,115,175) of each of said first and second portions (114,168,120,174) is substantially aligned with said surface (111,157) of said main portion (108,158).

4,250,769

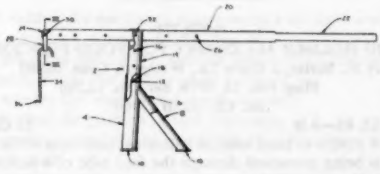
PIVOTED ADJUSTABLE LEVER WITH GRAB LINK

Gerald E. Herring, 808 Valerie, Pasadena, Tex. 77502

Filed Jun. 17, 1978, Ser. No. 925,233

Int. Cl.³ G05G *1/04*; B66F *3/00*

U.S. Cl. 74—525 **5 Claims**



1. A handoperated lifting apparatus comprising:

(a) a lever having a working end and a handle with means for longitudinal adjustment of a pivot point;

(b) a fulcrum having a tripod base with means for vertical adjustment of said pivot point; and

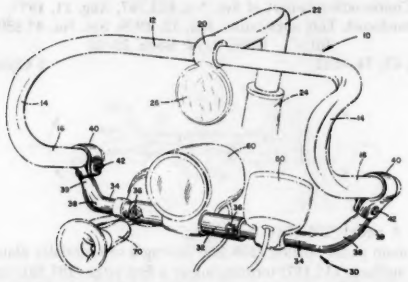
(c) means for adjusting the length of a linked chain and securing the adjusted length of chain to said working end, wherein said means for adjusting the length of a linked chain is a U-shaped grab hook with an inner surface having a keyhole configuration which includes an oval upper portion and a vertical slot, said vertical slot adapted to receive a link of chain.

4,250,770

HANDLEBAR ASSEMBLY

Willard A. Robertson, Jr., 303 Atlantic St., S.E., Washington, D.C. 20032

Filed Oct. 31, 1977, Ser. No. 847,147
Int. Cl.[2] B62K *21/12*; A61F *9/00*
U.S. Cl. 74—551.8 **1 Claim**



1. A handlebar assembly for protectively mounting bicycle accessories such as speedometers, lights, horns and the like, said handlebar assembly comprising

handlebar means having a substantially straight crossbar portion, said crossbar portion including a central portion adapted to be retained by a bicycle frame, said crossbar portion terminating in ends adpated to be gripped, each of said ends being formed by a downwardly curved portion and a rearwardly curved portion terminating in a handlegrip portion, in combination with

support bar means for supporting one or more of said accessories, said support bar means comprising a substantially straight support bar portion including ends, clamp means, affixed to said ends of said support bar means and adapted for rotational movement about said handlegrip portions, for quick and easy attachment and detachment of the support bar means to the handlegrip portions, and telscoping means for enabling longitudinal adjustment of said straight support bar to accommodate different spacings between the handlegrip portions,

said support bar means mounted in combination with the handlebar means to define an area for protecting said mounted accessories, the size of said area being adjustable by rotating said clamp means relative to said handlegrip portions to enable said telescoping means for longitudinal adjustment of said straight support bar.

4,250,771

FOOD HOLDER ACCESSORY FOR FOOD PROCESSOR

Robert M. Berler, 3 Bruce La., Westport, Conn. 06880

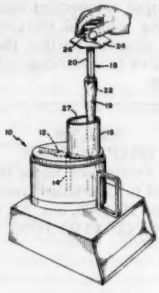
Filed Feb. 15, 1979, Ser. No. 12,260
Int. Cl.[3] B25B *27/00*
U.S. Cl. 81—3 R **13 Claims**

1. A device to hand hold an individual food item while such item is being processed through the feed tube of a motorized food processor which comprises

a longitudinal shaft for insertion into said feed tube

a food itemholding means comprising a plurality of food penetrating elements disposed in more than one plane formed on one end of said shaft

a depth limiting element to span a feed tube opening to limit the insertion of said shaft into said feed tube said depth limiting element being secured on one of its sides to the other end of said shaft, and



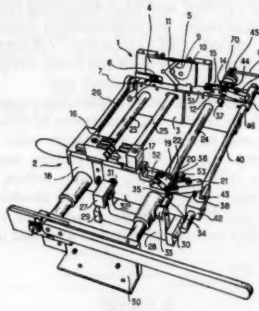
a handle secured on the opposite side of said depth limiting element.

4,250,772

METHOD AND APPARATUS FOR STRIPPING INSULATED ELECTRIC CONDUCTORS

Alfred Graber, Attenschwiller, France, assignor to Societe Electrique Sterling, Saint-Louis, France

Filed Jul. 24, 1979, Ser. No. 60,164
Claims priority, application France, Jul. 31, 1978, 78 22638
Int. Cl.[3] H02G *1/12*
U.S. Cl. 81—9.51 **12 Claims**



1. An apparatus for stripping an electric wire comprising a conductor covered by an insulating sheath or an electric cable constituted by a plurality of electric wires included within a common insulating sheath, which comprises:

two movable knives, the facing cutting edges of which define a passage for the wire or the cable, said knives movable in a substantially radial direction and in the plane of said passage between an introduction position wherein the minimum radial spacing between said edges is greater than the outer diameter of said insulating sheath and a cutting position wherein said minimum radial spacing is substantially equal to the inner diameter of said insulating sheath;

clamping means provided in prolongation of said passage for receiving a wire or cable portion the insulating sheath of which is to be preserved;

means for actuating said movable knives between said introduction position and said cutting position; and

means for applying the clamping means onto the wire portion they receive and for bringing same longitudinally along a direction perpendicular to said plane of the pas-

sage for relatively spacing and bringing together said clamping means and said knives;

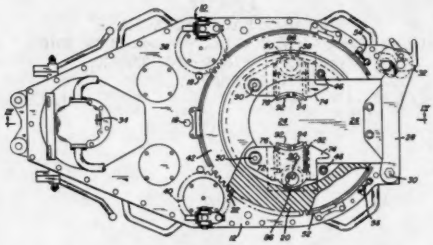
further comprising means for bringing the knives in a withdrawing position wherein the minimum radial spacing of the knife edges is greater than the inner diameter of the insulating sheath, but smaller than the outer diameter, and maintaining same in said position during at least the beginning of the relative spacing movement of said clamping means and of said knives.

4,250,773

ROTARY TONG INCORPORATING INTERCHANGEABLE JAWS FOR DRILL PIPE AND CASING

Charles W. Haynes, Spring, and Adrian E. Pitts, Houston, both of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Apr. 24, 1979, Ser. No. 32,812
Int. Cl.³ B25B 17/00
U.S. Cl. 81—57.18 6 Claims



1. In a power tong, the combination of:

a housing;

a generally annular rotor carried by said housing and rotatable relative to said housing about an axis extending generally perpendicular to the opposite sides of said housing;

cam surfaces formed on diametrically-opposite sides of the inner periphery of said annular rotor;

drive means carried by said housing for rotating said rotor;

a jaw assembly comprising plate members on opposite sides of said housing and said annular rotor; movable bolt members interconnecting said plate members;

two sets of interchangeable jaw elements either of which can be used independently of the other as a cooperating pair of pipe-gripping elements on said jaw assembly, each jaw element in each set having at least one bore through which an associated one of said bolt members is adapted to pass to secure a respective set of the jaw elements to said plate members;

each jaw element in each set of interchangeable jaw elements having a cam follower adapted to engage an associated one of the cam surfaces of said annular rotor, the jaw elements on one set being movable radially inwardly along a straight-line path of travel upon relative movement of the plate members and said annular rotor due to movement of said cam followers on associated ones of said cam surfaces, and the jaw elements in the other set comprising arms pivotally connected to their associated bolt members and pivotal radially inwardly about said bolt members upon relative movement of the plate members and said annular rotor due to movement of said last-mentioned cam followers on associated ones of said cam surfaces; and

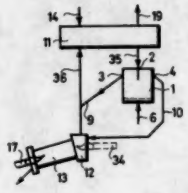
friction means for restraining rotation of said plate members.

4,250,774

SELF-ADJUSTING POWDER DISTRIBUTOR

Istvan Kraxner; Antal Sebok; Janos Steiner, all of Budapest, and Jozsef Toth, Almasfüzito, all of Hungary, assignors to Aluminiumipari Tervezo es Kutato Intezet, Budapest, Hungary

Division of Ser. No. 905,171, May 10, 1978, Pat. No. 4,203,689.
This application Jan. 31, 1979, Ser. No. 8,191
Int. Cl.³ F27B 15/00, 7/02
U.S. Cl. 432—15 5 Claims



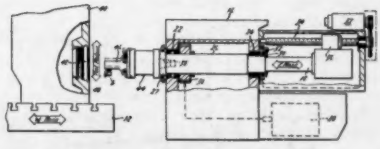
1. In a method of calcining a mineral, comprising the steps of preheating the mineral, feeding the preheated mineral to a calcining furnace, and returning gases from the calcining furnace to said preheating step to preheat the mineral; the improvement comprising feeding the mineral to a fluidized bed which is disposed downstream of said furnace with respect to the direction of flow of said mineral, fluidizing the bed with gas, passing a portion only of said fluidized mineral from said fluidized bed to said furnace, and withdrawing the other said portion of said fluidized mineral as product.

4,250,775

MACHINE TOOL AND METHOD

Richard A. Jerue, Bloomfield Hills, and Robert M. Ortlieb, Southfield, both of Mich., assignors to DeVlieg Machine Company, Royal Oak, Mich.

Continuation of Ser. No. 927,564, Jul. 24, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,583
Int. Cl.³ B23B 3/00, 41/00
U.S. Cl. 82—1 C 13 Claims



1. A method for machining a contour on a workpiece with a single point tool, comprising the steps of:

(1) mounting said tool for rotation about a fixed axis and for radial movement transverse to said axis;

(2) moving the workpiece toward said tool;

(3) sensing the position of said workpiece;

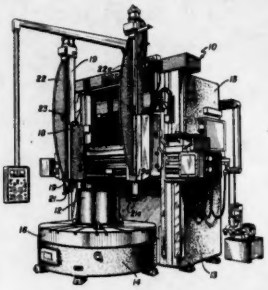
(4) sensing the radial position of said tool with respect to said axis; and

(5) simultaneously controlling said movement of said workpiece and said radial movement of said tool

(a) in response to said sensed positions, and

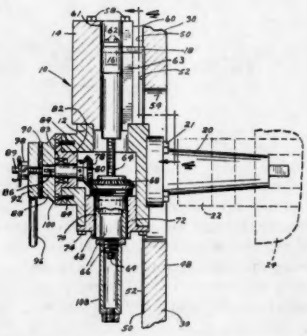
(b) in a predetermined relationship to one another, thereby causing said tool to machine on said workpiece a contour having a progressively changing dimension measured transversely to said axis.

4,250,776
MACHINE TOOL
Weld Morgan, Ten Roxbury St., Worcester, Mass. 01609
Filed Jul. 5, 1979, Ser. No. 54,931
Int. Cl.[3] B23B 3/00, 47/00
U.S. Cl. 82—2 D 8 Claims



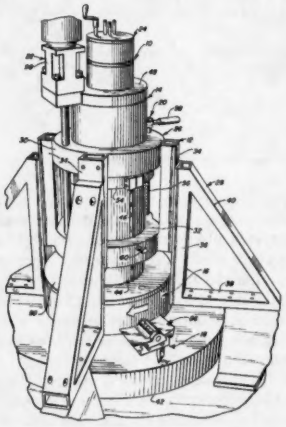
3. Machine tool for generating a surface of revolution on a workpiece, comprising:
(a) a base including a first portion adapted to carry the workpiece and a second portion extending at a right angle to the first portion,
(b) a driven table carried on the first portion and including means for holding the workpiece and rotating it about the axis of the surface of revolution,
(c) guide means mounted on the second portion,
(d) a ram slidably mounted in the guide means for longitudinal movement toward and away from the first portion, the end of the ram adjacent the first portion being adapted to carry a cutting tool, and
(e) a stiffening beam extending along the ram, being pivotally connected thereto at an intermediate portion, and having contact elements at its ends which contact the ram.

4,250,777
BORING HEAD
Walter E. Sorenson, 3870 Ugstad Rd., Duluth, Minn. 55811
Filed Jan. 2, 1979, Ser. No. 524
Int. Cl.[3] B23B 3/00, 41/00, 51/00
U.S. Cl. 82—2 E 11 Claims



1. A boring head for use with a machine-driven rotatable boring bar to machine a surface of a work piece concentric with and extending at right angles to the axis of rotation of the boring bar, said boring head including:
A. a main body;
B. means to attach the main body to the boring bar to establish an axis of boring head rotation coincident with the axis of boring bar rotation;
C. a tool slide extending longitudinally outwardly from the main body of the boring head radially of the axis of boring head rotation;
D. a tool holder slidably mounted in the tool slide for movement radially of the axis of boring head rotation.
E. a tool bit in the tool holder extending outwardly from the tool slide in direction toward a surface to be machined;
F. means to prevent rotation of the tool bit with respect to the longitudinal axis of the tool slide;
G. means responsive to rotation of the boring head on its axis of rotation to move said tool bit longitudinally of said tool slide at a rate proportional to the rate of movement of said boring head around said axis of rotation;
H. said tool slide being provided with a longitudinally extending guide slot defined by parallel, spaced-apart guide flats; and
I. said tool bit extending from the tool holder through said guide slot and being guided and supported by at least one of said tool slide guide flats as it moves longitudinally of the tool slide responsive to rotation of said boring head around the axis of boring head rotation.

4,250,778
PORTABLE FACING MACHINE
Dieter Christoph, 407 Walnut Dr., Streamwood, Ill. 60103
Filed Sep. 5, 1978, Ser. No. 939,920
Int. Cl.[2] B23B 3/22, 3/00
U.S. Cl. 82—4 R 11 Claims



1. A portable facing machine for cutting a flat face on a surface comprising; a frame adapted for providing support for the facing machine, a spindle support mounted on the frame and being longitudinally movable relative to the frame, a head depth control connected to the spindle support for selectively moving the spindle support longitudinally relative to the frame and selectively holding the spindle support in a selected position, a cutter support rotatably mounted in the spindle support and being movable longitudinally relative to the frame with the spindle support head, said cutter support including a head and a slide mounted in the head radially movable relative to the head, a cutting tool assembly mounted on the slide being rotatable with the cutter support and being radially movable relative to the head, a head drive connected to the head for rotating the cutter support in the spindle support, the head drive includes; an internal ring gear secured to the head of the cutter support, a drive pinion meshing with the ring gear, a drive shaft connected to the drive pinion and extending along the spindle support and being rotatably supported by a portion of

the spindle support, and a fluid motor on the drive shaft for rotating the drive shaft, and a radial drive connected to the slide for selectively moving the cutting tool assembly radially relative to the head while the cutter support is rotating in the spindle support.

4,250,779

APPARATUS FOR MAKING OUT-OF-ROUND WORKPIECES

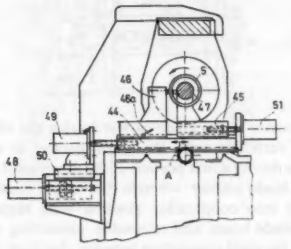
Otto Feller, Leichlingen; Manfred Kühl, Leverkusen-Rheindorf, and Alois Skrobek, Burscheid, all of Fed. Rep. of Germany, assignors to Goetze AG, Burscheid, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,732

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1977, 2732354

Int. Cl.³ B23S *5/24*

U.S. Cl. 82—18 **11 Claims**



1. In an apparatus for the non-circular peripheral machining of an out-of-round hollow workpiece having outer and inner peripheral faces to be non-circularly machined; the apparatus including a lathe spindle having an axis of rotation, means for clamping the workpiece to the lathe spindle for rotation therewith; a tool holder displaceable transversely to said axis for carrying a tool to engage the outer peripheral face of the workpiece for the external machining thereof; a first and a second setting motor for transversely displacing the tool holder during rotation of the lathe spindle; the improvement comprising means for rotating one of said setting motors in relatively large incremental steps and for rotating the other of said setting motors in relatively small incremental steps; first connecting means coupling the output of said first setting motor with said second setting motor and said tool holder for transversely displacing, with incremental steps, said second setting motor and said tool holder as a unit; second connecting means coupling the output of said second setting motor with said tool holder for transversely displacing, with incremental steps, said tool holder relative to said first connecting means and said first setting motor, whereby the relatively large and the relatively small incremental steps are superposed for transversely displacing said tool holder to an extent which is the combination of the relatively large and relatively small incremental steps; said second connecting means comprising a slide arranged for a transverse displacement with respect to said axis; mounting means for securing said tool holder to said slide; further comprising an additional tool holder for carrying an additional tool for engaging the inner peripheral face of the workpiece for the internal machining thereof; an additional slide arranged on said slide for transverse displacement with respect to said axis and relative to said slide; and a third setting motor mounted on said additional slide and connected to said additional slide for displacing said additional tool holder as a unit transversely to said axis and with respect to said slide.

3. In an apparatus for the non-circular peripheral machining of an out-of-round workpiece, including a lathe spindle having an axis of rotation, means for clamping the workpiece to the lathe spindle for rotation therewith; a tool holder displaceable transversely to said axis and carrying a tool to engage a peripheral face of the workpiece; a first and a second setting motor for transversely displacing the tool holder during rotation of the lathe spindle; said setting motors having respective output shafts; the improvement comprising means for rotating one of said setting motors in relatively large incremental steps and for rotating the other of said setting motors in relatively small incremental steps; a first connecting means including a slide arranged for a substantially linear, transverse displacement with respect to said axis; said tool holder including a rocker having rigidly interconnected first and second arms and being pivotally mounted on said slide; said first arm carrying said tool and said second setting motor being mounted on said slide for movement therewith as a unit; the output shaft of said first setting motor being connected with said slide, for displacing, with incremental steps, said slide, said rocker and said second setting motor as a unit; and second connecting means for coupling the output shaft of said second setting motor with said second arm of said rocker for angularly displacing, with incremental steps, said rocker relative to said slide and said first setting motor, whereby the relatively large and the relatively small incremental steps are superposed for radially displacing said tool with respect to said axis to an extent which is the combination of the relatively large and relatively small incremental steps.

4,250,780

CUTTER BLADE RECEIVING MEMBER IN A PRINTER

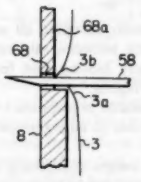
Munetaka Shimizu, and Hiroyuki Harada, both of Kawagoe, Japan, assignors to Copal Company Limited, Tokyo, Japan

Filed Oct. 24, 1978, Ser. No. 954,283

Claims priority, application Japan, Dec. 29, 1977, 52/176771[U]

Int. Cl.³ B41F *13/54*; B41J *11/70*

U.S. Cl. 83—176 **3 Claims**



1. In a paper printer including a strip of thin easily deformable paper, means for moving the paper in a predetermined direction, and a cutter blade actuated by a cutter device, a cutter blade receiving member cooperating with said cutter blade, said cutter blade receiving member comprising:

a plate having a face over which said paper strip passes;

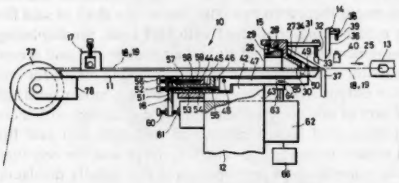
a slit on said face and into which said cutter blade is received, means moving said blade for completely penetrating and cutting said strip and passing through a portion of said plate and causing the cut ends to sag, the width of said slit exceeding that of said blade by an amount sufficient to permit said sagging to occur;

a raised portion on said face and located immediately upstream from said slit in said predetermined feeding direction, a portion integral with said cutter blade receiving member and located immediately downstream from said raised portion being of a reduced thickness relative to said raised portion so as to form a step on said face, whereby said sagging cut end does not enter said slit when moving in said predetermined direction.

4,250,781
APPARATUS FOR CUTTING OFF A PAIR OF SLIDE FASTENER STRINGERS

Hiroshi Nakamura, Higashi, Japan, assignor to Yoshida Kogyo, K.K., Tokyo, Japan

Filed Apr. 13, 1979, Ser. No. 29,871
Claims priority, application Japan, Apr. 28, 1978, 53-51131
Int. Cl.[3] B26D 5/28
U.S. Cl. 83—210 7 Claims



1. An apparatus for cutting off a pair of interlocked fastener stringers including a plurality of longitudinally spaced chains of coupling elements with a plurality of sliders mounted respectively thereon, there being a plurality of element-free spaces between the longitudinally spaced chains, said apparatus comprising:

a guide table for supporting the slide fastener stringers thereon;

means for feeding the slide fastener stringers longitudinally over said guide table;

slider sensing means on said guide table for sensing one of the sliders at a time;

space sensing means on said guide table for sensing one of the element-free spaces at a time in response to the actuation of said slider sensing means, so as to stop the slide fastener stringers;

means for cutting off the slide fastener stringers across said one of the spaces upon stoppage of said slide fastener stringers;

said slider sensing means comprising a support mounted on said guide table;

a feeler lever pivotally mounted on said support;

spring means acting between said support and said feeler lever for normally biasing said feeler lever against the slide fastener stringers;

switch means actuatable in response to pivotal movement of said feeler lever due to engagement thereof with said one of said sliders;

said space sensing means comprising a stop lever pivotable with respect to said guide table;

stop lever actuating means for actuating said stop lever;

said stop lever having means insertable into said one of the spaces in response to the energization of said stop lever actuating means; and

a time switch for energizing said stop lever actuating means a predetermined interval of time after the actuating of said switch means.

4,250,782
SHEAR WITH INCLINED GUIDES

Erich Munker, Kreuztal-Ferndo, Fed. Rep. of Germany, assignor to Schloemann-Siemag Aktiengesellschaft, Düsseldorf, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 873,149, Jan. 27, 1978, abandoned. This application Nov. 21, 1979, Ser. No. 96,483
Claims priority, application Fed. Rep. of Germany, Jan. 1, 1977, 2703197
Int. Cl.[3] B23D 23/00
U.S. Cl. 83—376 10 Claims

1. A shear, comprising:

(a) a frame,

(b) a guide carrier guided for vertical movement within the frame and having an inclined guide surface,

(c) a stop for preventing downward movement of the guide carrier beyond a lower position,

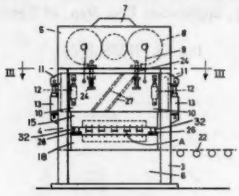
(d) a blade carrier having an inclined guide surface congruent with and slidable on the inclined guide surface of the guide carrier,

(e) a lower fixed blade beam mounted on the frame,

(f) an upper movable blade beam fixed to the blade carrier,

(g) drive means for vertically reciprocating the blade carrier, and

(h) releasable connecting means for rigidly connecting the

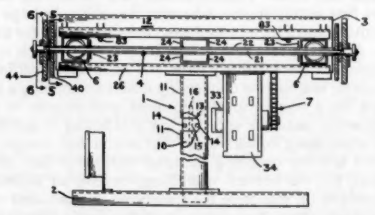


blade carrier to the guide carrier so that the blade carrier moves vertically with the guide carrier to said lower position during a first portion of the downward movement of the blade carrier wherein the upper blade beam is brought into cooperating position with respect to the lower blade beam, said releasable connecting means permitting the rigid connection between the blade carrier and the guide carrier and allowing the blade carrier to move obliquely with respect to the guide carrier along said guide surfaces for the remainder of the downward movement of the blade carrier wherein the upper blade beam is moved obliquely relative to the lower bed beam for a shearing operation.

4,250,783
BALE CUTTING APPARATUS

Claude W. Ogle, 4961 Montcrest Dr., Chattanooga, Tenn. 37416

Filed Oct. 25, 1978, Ser. No. 954,468
Int. Cl.[3] B26D 5/08
U.S. Cl. 83—397 21 Claims



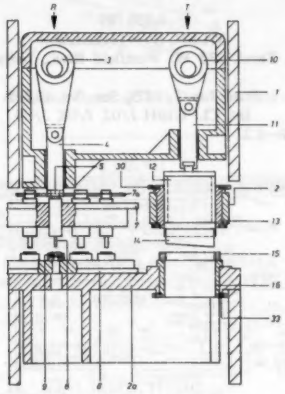
1. Bale cutting apparatus for cutting straps wound on a bale of material, said apparatus comprising reciprocable cutter means having an initial position and being movable between a retracted inoperative position and an extended operative position, and means operative in response to contact of a bale with the cutter means in said initial position for retracting the cutter means to its retracted position and for thereafter propelling the cutter means to its extended position to cut the straps on the bale.

4,250,784

PRESS FOR PUNCHING AND CUTTING PLATE-SHAPED WORKPIECES, ESPECIALLY SHEET METAL WORKPIECES

Walter Bredow, Alfeld, Fed. Rep. of Germany, assignor to C. Behrens AG, Alfred, Fed. Rep. of Germany

Filed Nov. 29, 1978, Ser. No. 964,735
Int. Cl.[3] B26D *9/00*
U.S. Cl. 83—518 16 Claims



1. A combined press for punching and cutting plate-shaped workpieces, especially workpieces of sheet metal, comprising support means; at least one punching tool means mounted on said support means and including a punch reciprocable along an axis; first means operatively connected to said punch for reciprocating the same along said axis; cutting tool means mounted on said support means and including at least one knife reciprocable in a plane parallel to said axis; second means operatively connected to said knife for reciprocating the same in said plane, each of said first and second reciprocating means comprising a plunger guided in said support means for reciprocating movement and eccentric drive means connected to one end of said plunger, said punch and knife being connected to the other end of the respective plunger; main drive means; and transmission means connected to said main drive means and selectively connectable to said first and second reciprocating means to reciprocate either said punch or said cutting knife, said transmission means comprising a cardan shaft connected at one end to said main drive means and a coupling shaft connected to the other end of said cardan shaft, and means cooperating with said coupling shaft for moving the latter selectively between two positions for respectively coupling said coupling shaft to the eccentric drive means of either said first or said second reciprocating means.

4,250,785

TURRET TYPE PUNCH PRESS HAVING A PLURALITY OF STRIKERS

Akio Morishita, Kagamihara; Masayoshi Mizukado, Gifu, and Naoe Fukumura, Inuyama, all of Japan, assignors to Yamazaky Iron Works, Japan

Filed Sep. 7, 1979, Ser. No. 73,561
Claims priority, application Japan, Jun. 2, 1979, 54-69081
Int. Cl.[3] B26F *1/04*
U.S. Cl. 83—552 3 Claims

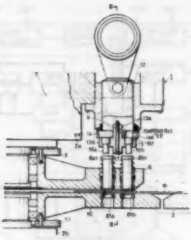
1. A turret type punch press having a plurality of strikers, said punch press comprising:

a turret mechanism;

a plurality of large-diametrical punches radially spaced along a main circular track of said turret mechanism;

a plurality of small-diametrical punches spaced along a plurality of subtracks centering around points on said main circular track between every two adjacent large-diametrical punches;

a main striker provided in the lower end of a ram to correspond with said large-diametrical punches; and



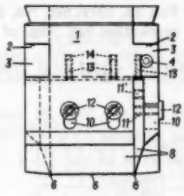
a plurality of substrikers provided circumferentially around said main striker to correspond with said small-diametrical punches, said main striker and substrikers being selectively operated according to selection of said punches.

4,250,786

PUNCHING TOOL

Simon Bleich, Gassergasse 29, 1050 Wien, Österreich, Austria

Filed Nov. 13, 1978, Ser. No. 960,437
Claims priority, application Austria, Nov. 14, 1977, 8106/77
Int. Cl.[3] B26F *1/44*
U.S. Cl. 83—691 14 Claims



1. A punching tool comprising a plurality of knives, each of which is provided with a cutting knife edge, an inclined surface extending upwardly and outwardly from the cutting knife edge when the knives are assembled to form a continuous closed array, and a smooth inside surface; and a plurality of detachably interconnected, vertical knife holders to which respective ones of said knives are vertically adjustably fixed in such a manner that the inclined surfaces of the knives are positioned to exert a pressing force on material being punched and the inside surfaces of the knives merge with inside surfaces of the knife holders to define guide surfaces for parts punched from the material.

4,250,787

MUSIC TONE GENERATOR

Marc H. Segan, and Sayre A. Swarztrauber, both of New York, N.Y., assignors to Calfax, Inc., New York, N.Y.

Filed Feb. 1, 1979, Ser. No. 268
Int. Cl.[3] G10H *7/00*
U.S. Cl. 84—1.01 8 Claims

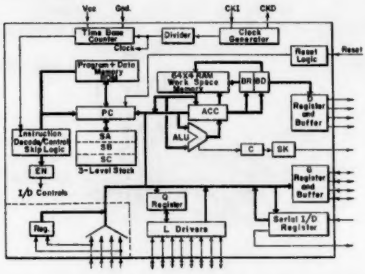
1. A device for sounding musical notes comprising:

(a) at least one output means for producing sound;

(b) means for producing an electrical signal which alternates between two voltage levels;

(c) control means associated with said signal producing means for controlling the times at which said signal changes between said two voltage levels, said changes

being selected to provide a predetermined energy content of each period of the fundamental frequency of each musical note so as to vary the intensity of each note over its duration; and



(d) means for transmitting said controlled electrical signal to said output means; whereby musical notes are sounded having substantially the same aural qualities as those produced by a musical instrument.

4,250,788

REGISTER ARRANGEMENT FOR ELECTRONIC MUSICAL INSTRUMENTS

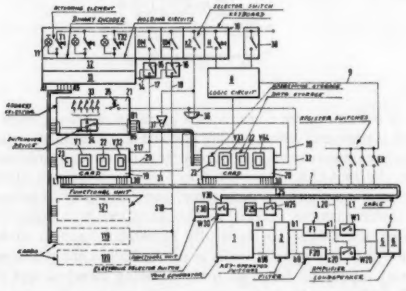
Reinhard Franz, Emmelshausen, and Wilfried Dittmar, Halsenbach, both of Fed. Rep. of Germany, assignors to WERSI-electronic GmbH & Co. KG, Halsenbach, Fed. Rep. of Germany

Filed Feb. 13, 1979, Ser. No. 11,937

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807873

Int. Cl.³ G10H *5/00, 7/00*

U.S. Cl. 84—1.01 **13 Claims**



1. In a register arrangement for an electronic musical instrument including a tone generator for producing tone signals; means for actuating the tone generator to produce selected tone signals, including a plurality of functional units; means for rendering the functional units effective, including selector switches having control inputs; means for applying control voltage to the control inputs, including a plurality of distributor circuits having storages and outputs activated by the control voltage in accordance with the information stored in the respective storages, means for selectively energizing the distributor circuits, and means for connecting the distributor circuits to the control inputs of the selector switches; amplifier means for amplifying the tone signals; loudspeaker means for converting the amplified tone signals into sounds; and means for mounting said distributing circuits on the register arrangement; the improvement wherein the storages of at least a group of said distributor circuits are non-volatile storages having data inputs for programming the latter by supplying voltage thereto, and wherein said mounting means detachably mounts said distributor circuits at least of said group on said register arrangement and includes means for coupling said data inputs of said storages of said group of distributor circuits to said connecting means for supplying voltage from said connecting means to said non-volatile storages so as to program the latter and keep the same programmed even upon detachment of said distributor circuits of said register arrangement.

4,250,789

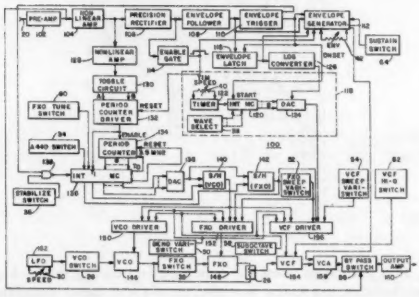
MUSIC SYNTHESIZER

Donald L. Tavel, 233 W. Westfield Blvd., Indianapolis, Ind. 46208

Filed Jun. 7, 1979, Ser. No. 46,205

Int. Cl.³ G10H *1/02, 1/08, 5/00*

U.S. Cl. 84—1.22 **19 Claims**



1. In a music synthesizer having means for generating a first voltage manifesting the frequency of an input signal, first voltage controlled oscillator means for responding to said first voltage by providing a signal having a first frequency related to said first voltage, the improvement comprising:

means for programming said synthesizer to provide a programmed voltage;

second voltage controlled oscillator means which responds to a second voltage applied thereto for providing a signal having a second frequency related to said second voltage, said second voltage being related to said first voltage less said programmed voltage;

means for connecting a modulating signal having said first frequency to said second voltage controlled oscillator means to frequency modulate said second voltage controlled oscillator means signal; and

means for combining said first and second voltage controlled oscillator means signals as a synthesizer output signal.

4,250,790

CAPO

Richard Shubb, P.O. Box 5311, Berkeley, Calif. 94705, and David Coontz, P.O. Box 283, Corydon, Iowa 50060

Filed Oct. 22, 1979, Ser. No. 86,852

Int. Cl.³ G10D *3/04*

U.S. Cl. 84—318 **8 Claims**

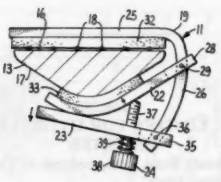
1. A capo for use with a stringed instrument having a neck having a fingerboard and a back and a plurality of strings that extend longitudinally over said fingerboard comprising

(a) a frame that includes a top arm that extends across the fingerboard above the strings and a side arm that extends generally laterally of the neck;

(b) a jaw member, one end of which is pivotally attached to the side arm, said jaw member extending under said back;

(c) a lever member, one end of which is pivotally attached to the side arm at a point below the site of attachment of the jaw member to the side arm; and

(d) an adjusting screw having a threaded shaft that is received through a threaded bore in the lever member and



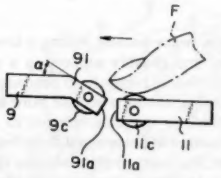
one end of which bears against the underside of the jaw member.

4,250,791

KEY MECHANISM FOR MUSICAL WIND INSTRUMENTS

Katsutoshi Tairadate, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Japan

Filed Feb. 26, 1979, Ser. No. 16,331
Claims priority, application Japan, Feb. 25, 1978, 53-23617
Int. Cl.³ G10D *7/08, 9/04*
U.S. Cl. 84—385 R **31 Claims**



1. Improved key mechanism for musical wind instruments comprising

a plurality of collectively arranged finger pieces for controlling tone holes of an instrument and the finger pieces having respective foreside surfaces, respective opposite rear sides and respective peripheral rims, at least one of said finger pieces having rim portions around said rim thereof and being provided with a sinking incline in one said rim portion which is adjacent to a neighbouring said finger piece, said sinking incline sloping towards the rear side and towards the corresponding rim of the respective said one finger piece;

said one finger piece having a recess formed in said sinking incline in said one rim portion, a rotatable roller received in said recess and rotatably supported on said finger piece and the axis of rotation of said roller being substantially in parallel to the corresponding said rim of said finger piece.

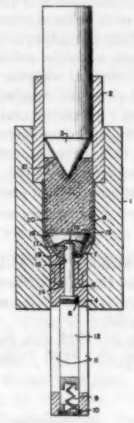
4,250,792

PROCESS FOR THE PRODUCTION OF COMPACTED EXPLOSIVE CHARGES

Gunter Deigmuller, Steyergerg; Andreas Munk, Haiger; Bruno Rohe, Burbach-Wurgendorf, and Manfred Strunk, Heuenrade, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 1, 1979, Ser. No. 16,536
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2813179
Int. Cl.³ C06B *21/00*
U.S. Cl. 86—1 R **6 Claims**

1. A process for the production of compacted explosive charges, especially hollow charges, wherein a pulverulent explosive is compacted to form a charge within a compacting chamber and an inert body is arranged in the charge, characterized in that the inert body is a shaped member and is arranged within the compacting chamber in a predetermined starting position, to be displaceable in the compacting direction; and the pulverulent explosive for forming the charge



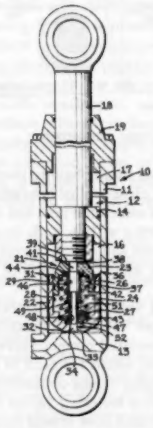
including the portion surrounding the inert body is compacted under displacement of the inert body in a single pressure-molding operation, the pulverulent explosive being introduced into the compacting chamber prior to the pressure-molding operation.

4,250,793

CUSHIONING DEVICE FOR FLUID JACKS

Lawrance F. Berg, Lockport, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 20, 1978, Ser. No. 967,801
Int. Cl.³ F15B *15/22;* **F01B** *11/02*
U.S. Cl. 91—407 **3 Claims**



1. In a fluid jack (10) having a cylinder (11), piston means (12) reciprocatably positioned within the cylinder (11) and movable toward and away from a closed end (13) of the cylinder (11), the improvement comprising:

a cushioning device (21) floatingly positioned within the cylinder (11) between the piston means (12) and the closed end (13) of the cylinder (11), said cushioning device (21)

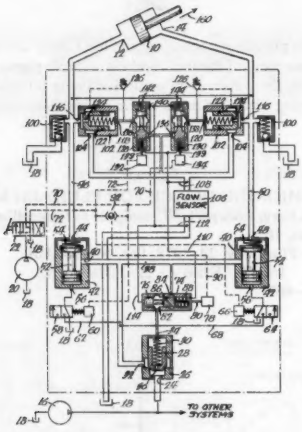
having a first member (22) slidably positioned within the cylinder (11) and having a bore (28), a second member (23) slidably positioned within said bore (28), means (26) for forming a variable volume chamber (24) between said first member (22) and said second member (23), and means (27) for metering fluid from said variable volume chamber (24) in response to relative movement between said first and second members (22, 23) in a direction for decreasing the volume of said variable volume chamber (24), said means (26) for forming a variable volume chamber (24) including a third elongate member (42) sealingly seated against one of said first and second members (22, 23) and having a bore (46) extending therethrough, and a fourth elongate member (43) sealingly seated against the other of said first and second members (22, 23) and telescopically extending into the bore (46) of said third member (42).

4,250,794

HIGH PRESSURE HYDRAULIC SYSTEM

Willard J. Haak, Peoria; Howard A. Marsden, Pekin, and James P. Mueller, East Peoria, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Mar. 31, 1978, Ser. No. 892,370
Int. Cl.³ F15B *13/042*
U.S. Cl. 91—420 **5 Claims**



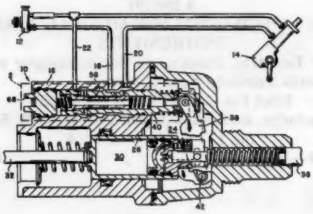
1. A hydraulic system comprising:
a fluid reservoir;
a bidirectional fluid motor having two ports;
a pair of normally closed, pilot operated poppet valves, each connected to an associated port and to said fluid reservoir;
a flow sensor having a flow path interconnecting each of said poppet valves and said reservoir having output means for providing a signal representing flow rate along said flow path;
a pair of metering valves each connected to the pilot of an associated poppet valve for controlling the flow of fluid through the associated poppet valve;
control signal input means for each of said metering valves;
flow rate signal input means connected to said flow sensor and to each of said metering valves for delivery of a flow rate signal from said flow sensor to each of said metering valves;
wherein each poppet valve is ultimately controlled by both control signals and the flow rate through said flow sensor;
each of said metering valves further including pressure signal input means responsive to a hydraulic signal having an elevated pressure for opening the associated poppet valve; and
means cross-connecting said pressure signal input means to the port with which the corresponding poppet valve is not associated.

4,250,795

PRESSURE LIMITER FOR HYDRAULIC BRAKE BOOSTER

Jack Martinic, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jun. 23, 1978, Ser. No. 918,631
Int. Cl.³ F15B *11/08, 13/042*
U.S. Cl. 91—445 **9 Claims**



1. In a hydraulic brake booster having a housing defining a pressure chamber and slidably supporting a piston in a first bore which is movable in response to pressure in the pressure chamber, the housing having a second bore for supporting a control valve which is movable relative to the housing to control communication of pressurized fluid from an inlet to the pressure chamber, the improvement wherein the control valve defines a passage leading to the pressure chamber and said passage receives a shuttle valve, said shuttle valve being responsive to the pressure within the pressure chamber to move relative to the control valve to substantially limit communication of pressurized fluid from the inlet to the pressure chamber, said passage defining a stepped bore with a large diameter and a small diameter and said shuttle valve including a large diameter portion disposed within said large diameter and a small diameter portion disposed within said small diameter, and said shuttle valve defining an opening extending therethrough from said large diameter portion to said small diameter portion to communicate the fluid pressure within the small diameter acting against the small diameter portion to the large diameter.

4,250,796

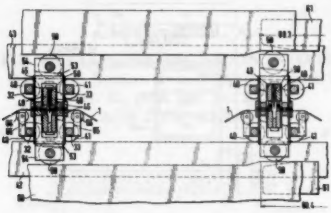
METHOD AND APPARATUS FOR MAKING BAGS FROM TUBULAR OR SEMI-TUBULAR WEBS

Fritz Achelpohl, and Horst Schneider, both of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Mar. 13, 1979, Ser. No. 20,066
Claims priority, application Fed. Rep. of Germany, Mar. 31, 1978, 2810896
Int. Cl.³ B31B *1/64, 23/14*
U.S. Cl. 493—203 **4 Claims**

1. A method of making bags from tubular or semitubular webs comprising sequentially:
transversely cutting a web to form a severed section;
pulling apart confronting ends of the web and the severed section by a distance equal to the width of flaps that would

otherwise project beyond weld seams applied to the confronting ends; and



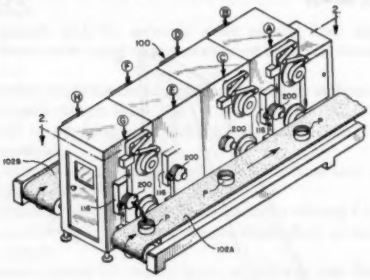
transversely welding the confronting ends to thereby form a bag from the severed section.

4,250,797

APPARATUS FOR MAKING CORRUGATED PACKAGES

James A. Goodman, Glencoe, Ill., assignor to Consolidated Foods Corp., Deerfield, Ill.

Filed Dec. 28, 1978, Ser. No. 974,065
Int. Cl.[3] B31C 1/06; B31B 7/00
U.S. Cl. 93—58 15 Claims



1. A machine for forming a corrugated package having sufficient rigidity to protect during formation or storage within the package and having a readily openable sidewall which facilitates display and use of the product, said machine comprising:

a rotatable corrugation head having a front face and a rigid fluted periphery of a selected circumference;

corrugating means movable into association with said head for gripping a sheet of material and urging said sheet into conformance with said fluted periphery;

vacuum means to secure said sheet to said head in conformance with said fluted periphery;

activating means to selectively move said corrugating means between a disengaged position removed from said head and a position associated with said head;

means for feeding a first pre-cut sheet of material having a selected length and width between said head and corrugating means for forming the inner corrugated sheet of the package sidewall by rotation of said head with said inner sheet secured thereto, the length of said first sheet being coordinated with respect to the periphery of said corrugation head so that the free ends of said sheet are adjacent when said sheet is secured around said head;

means for locating a bottom wall member having a selected shape and an outer edge adjacent said front face of said head with said edge aligned with said fluted periphery;

means for securing said bottom wall member to said front face for rotation with said head;

means for feeding a second precut sheet of material to said head for forming the outer sheet of the package sidewall, said outer sheet having a selected length sufficient to surround said corrugated inner sheet secured to said head and a selected width greater than the width of said inner sheet;

sealing means movable into association with said head for joining said inner corrugated sheet only to said outer sheet as said head is rotated so that said adjacent free ends of said inner sheet form an unsealed joint across said sidewall, said sealing means also sealing said outer sheet to said bottom wall member as said head is rotated so a frangible joint is formed between said bottom wall member and said sidewall, said sealing means thereby completing the formation of the package by providing a rigid corrugated sidewall which can be readily removed from said bottom wall to open said package; and

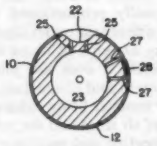
sealer activating means for moving said sealing means between a disengaged portion removed from said head and an operating position in association with said head.

4,250,798

METHOD OF AND DEVICE FOR FABRICATING PLASTIC SLEEVES

Yoshihiro Yamato; Hideo Okada; Masayuki Takasaka, all of Yokohama, and Masanori Urabe, Tokyo, all of Japan, assignors to Toyo Garasu Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1978, Ser. No. 959,775
Claims priority, application Japan, Dec. 19, 1977, 52-152600
Int. Cl.[3] B31C 1/02
U.S. Cl. 493—306 3 Claims



1. A device for fabricating plastic sleeves, comprising:

a mandrel body having a hollow interior and a cylindrical outer surface with at least one groove having a concave surface extending therealong parallel to the cylindrical axis of said mandrel body for supporting a cylindrical shape with the ends overlapped, said concave surface having a profile which is longer in the peripheral direction of said mandrel body than the length of the profile of said cylindrical surface extended across said groove, said mandrel body having a plurality of holes extending therethrough and opening in said groove and on said outer surface;

means for successively applying vacuum and pressurized gas to said hollow interior to successively draw said blank tightly against said outer surface and the surface of said groove by suction through said holes and expand said blank to a diameter greater than that of the outer surface of the mandrel body;

sealing means movable into engagement with said overlapped ends against said mandrel body for bonding together said overlapped ends to form a seam therealong and thereby form a plastic sleeve; and

stripping means movable along the cylindrical surface of said mandrel body parallel to the axis of said mandrel body for stripping the plastic sleeve thus formed off said mandrel body when the applying means ceases to apply vacuum and applies compressed gas to said holes, whereby the sleeve expands freely due to the difference in lengths of said profiles out of contact with said mandrel to a diameter sufficiently greater than the diameter of said

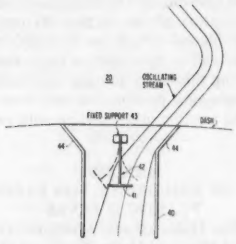
mandrel body to be easily and surely stripped from said mandrel body by said stripping means.

4,250,799

SWEEPING AIR STREAM APPARATUS AND METHOD

Ronald D. Stouffer, Silver Spring, Md., assignor to Bowles Fluidics Corporation, Silver Spring, Md.

Filed Apr. 17, 1979, Ser. No. 30,794
Int. Cl.³ B60H 1/14
U.S. Cl. 98—2.08 **8 Claims**



1. In an automobile air flow system under dashboard wherein a source of air under pressure is forced through a channel to an outlet element in said dashboard in a sweeping air stream pattern, the improvement comprising,

an air powered oscillatory member, and

means supporting said oscillatory member proximate the center of said outlet element, said oscillatory member being dimensionally proportioned with respect to the cross-sectional size of said outlet element and said channel such that at any extreme of its oscillatory movement in said outlet element it does not physically contact any structural portion of said channel and said outlet element, said oscillatory member being rendered oscillatory solely upon the flow of air from said source through said outlet, said means supporting said oscillatory member includes a spring, means securing said spring at one end to said oscillatory member and at the opposite end to at least one surface of said outlet element, said oscillatory member including an impingement member secured to said spring and wherein the rate of oscillation of said impingement member is related to the spring constant of said spring, the rate of air flow and the weight of said impingement member.

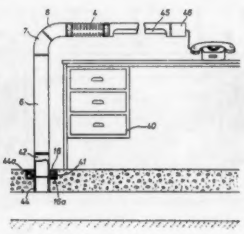
4,250,800

OUTLET TUBE FOR AIR CONDITIONING SYSTEMS

Heinz P. Brockmeyer, Giessen, Fed. Rep. of Germany, assignor to Schmidt-Reuter Ingenieurgesellschaft mbH & Co. KG, Cologne, Fed. Rep. of Germany

Filed Apr. 8, 1976, Ser. No. 674,850
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1975, 2515440; Dec. 1, 1975, 2553984; Dec. 1, 1975, 7538262[U]
Int. Cl.³ F24F 7/00, 13/00
U.S. Cl. 98—40 C **13 Claims**

1. An outlet tube in combination with air conducting systems having an air duct extending underneath a room floor with a blow-out hole, said outlet tube and said blow-out hole having corresponding air-tight and detachable coupling members and being connected by said corresponding coupling members, said outlet tube comprised of a plurality of tube portions from which said outlet tube is assembled, and said tube portions being provided at their ends with said corresponding coupling members, said tube portions comprise electric wires and telephone cables ending in corresponding plugs and sockets which come into connection when said outlet tube is assembled from said tube portions, said tube portions comprising sub-portions which are rotatable relative to one another, said corresponding coupling members rotatably mounted on said tube portions, one of said tube portions comprising an electric lamp, and further comprising an air-dispersing element at the tube end,



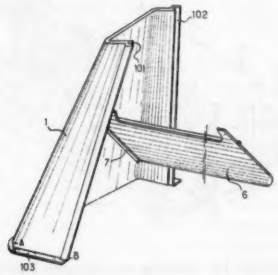
said air-dispersing element having openings and being provided with adjustable covers in front thereof.

4,250,801

CHIMNEY THROAT

Michel Boidron, 136, avenue du Medoc, Le Vigean, 33320 Eysines, France

Filed Apr. 6, 1979, Ser. No. 27,585
Claims priority, application France, Apr. 7, 1978, 78 10409
Int. Cl.³ F23L 17/02
U.S. Cl. 98—59 **6 Claims**



1. A prefabricated metallic throat, for connecting the hearth of a chimney to the smoke conduit, said throat comprising two identical plates of a first type assembled by simple interengagement of their edges with the edges of two indentical plates of a second type to form a principal body shaped as a hollow truncated regular pyramid having a rectangular base, said plates of the first type having sections of "C" shape in planes parallel to the base and each forming a side face and two return front and rear faces of the principal body, said plates of the second type joining said return faces to form front and rear faces of the throat, all of said plates being of molded cast iron and each plate having a lower edge bent towards the exterior, the bent edges of the said plates joining between themselves to form a continuous edge for assembly of the chimney hearth, said plates of the second type being trapezium shaped with oblique sides which are inclined at an angle dependent upon the size of the chimney such that the said return faces of the "C" section plates are of a length which does not exceed a predetermined limit compatible with molding of the cast iron without use of a core, the dimensions of the base of the plates of the first type and of the small base of the plates of the second type, and the height of the principal body, remaining constant for throats for different sizes of chimney, said throat further comprising a cap of molded cast iron including a frame for supporting a smoke conduit of the chimney and for supporting an axis for a closing valve, said frame having a skirt fast with

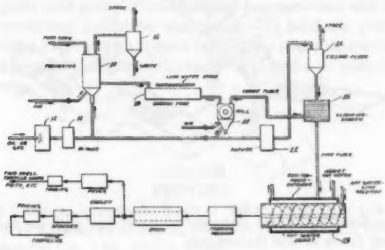
the lower face of the frame and surmounting an external surface of an upper edge of said principal body.

4,250,802

APPARATUS FOR CONVERTING GRAIN INTO DOUGH

Manuel J. Rubio, 192 Benham Ave., Bridgeport, Conn. 06605

Filed Mar. 22, 1979, Ser. No. 22,787
Int. Cl.[3] A47J *27/00*; A23L *1/00*
U.S. Cl. 99—348 4 Claims



1. Apparatus for converting grain into dough comprising
a pre-heater for quickly heating grain while in the unwetted state,
a quench tank for spraying grain passing from said pre-heater with liquid of pre-established chemical characteristics,
transfer means for causing grain to pass from said pre-heater to said quench tank,
a mill for crushing grain coming from said quench tank into particles,
transfer means for causing grain to pass from said quench tank to said mill,
a classifier for segregating grain particles coming from said quench tank according to pre-established particle size criteria,
transfer means for causing grain particles to pass from said mill to said classifier,
mixing means for mixing said particles with liquid of pre-established chemical characteristics to form a dough, heat means for applying cooking heat to said dough, and extruder means for extruding said dough,
and transfer means for causing said particles to pass from said classifier to said mixing means.

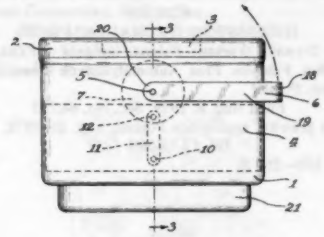
4,250,803

DEEP FRYER

Kurt Wohlfart, Offenbach, Fed. Rep. of Germany, assignor to Rowenta-Werke GmbH, Offenbach am Main, Fed. Rep. of Germany

Filed Jun. 25, 1979, Ser. No. 51,582
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1978, 2833327
Int. Cl.[3] A47J *37/12*
U.S. Cl. 99—409 5 Claims

1. In a deep fryer of a compact, portable type comprising a vessel, a handle, which is mounted to the vessel, a basket, which is adapted to be lowered and raised within the vessel, a cover, which fits removably onto the vessel so as to cover the vessel, and means for lowering and raising the basket within the vessel while the vessel remains covered by the cover, wherein the handle has opposite ends mounted pivotally to opposite sides of the vessel, an improvement wherein the basket lowering and raising means comprises a pair of pins, each of which is attached to one of the ends of the handle so as to rotate conjointly with the other pin as the handle is pivoted, and which are linked to opposite sides of the basket so as to lower and raise the basket within the vessel as the handle is



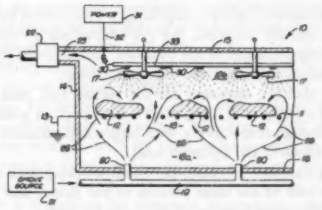
pivoted oppositely while the vessel remains covered by the cover.

4,250,804

ION ENHANCED SMOKE TREATMENT OF EDIBLES

Donald G. Saurenman, Whittier, Calif., assignor to Consan Pacific Incorporated, Whittier, Calif.

Continuation-in-part of Ser. No. 893,003, Apr. 3, 1978, abandoned. This application Feb. 21, 1979, Ser. No. 13,786
Int. Cl.[3] A23L *3/32*; A23B *4/04*
U.S. Cl. 99—451 12 Claims



1. In apparatus for enhancing smoke treatment of edibles, the combination comprising
(a) first means for dispersing smoke particles in a zone wherein the edibles are located, and means for inducing smoke particle flow to contact exposed undersides of the edibles, and to flow around and above the edibles,
(b) other means including a source of high voltage and multiple pointed tips to which said voltage is applied for dispersing charged ions into the smoke flowing upwardly above the edibles with the ions carrying an electrical charge or charges causing smoke particles to be attracted back downwardly onto upper sides of the edibles,
(c) and metallic structure having local contact with exposed underside portions of the edibles, said structure imparting a potential to the edibles to cause said smoke particles into which ions have been dispersed to be attracted to the upper sides of the edibles,
(d) said tips arranged in spaced apart clusters and pointed toward the edibles so that the ions being dispersed enhance smoke particle flow onto the edibles,
(e) said metallic structure including metallic grid structure supporting the edibles, the grid structure being electrically conductive, and
(f) the smoke being dispersed by said first means into a lower region of said zone lower than the edibles, and the ions are dispersed by said tips into an upper region of said zone higher than the edibles, said smoke particle flow inducing means located in and openly exposed in said zone to displace the smoke and ions above the levels of the edibles,

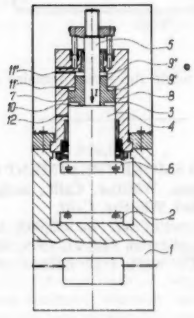
and in a direction and at a rate sufficient to enhance smoke particle flow onto the edibles.

4,250,805

HIGH-SPEED HYDRAULIC PRESS

Edmund Nowak, Warsaw, Poland, assignor to Zaklad Nr 2 Hydomat Fabryka Pras Automatycznych Ponar-Plasomat, Warsaw, Poland

Filed Aug. 8, 1979, Ser. No. 64,797
Claims priority, application Poland, Aug. 25, 1978, 209231
Int. Cl.³ B30B *1/32*
U.S. Cl. 100—269 B **7 Claims**



1. In a hydraulic press comprising a ram and a hydraulic driving system for the ram, the ram including a cylinder, a piston slidably mounted in the cylinder, and a piston rod rigid with the piston, the improvement comprising:

a sleeve slidably mounted on the piston rod, said sleeve having a peripheral flange and a stem portion which sealingly engage respectively with larger and reduced diameter portions of the cylinder wall,

a driving chamber of relatively small working area defined by one end of the stem portion of the sleeve and the reduced diameter portion of the cylinder wall,

a working chamber of relatively large working area defined by the flange, the larger diameter portion of the cylinder wall, and the working area of the piston, and:

means for supplying pressurized liquid medium to said chambers, whereby in operation, pressurized fluid medium is supplied to said driving chamber to cause approach movement of the ram, and, towards the end of the approach movement, pressurized liquid medium is supplied to said working chamber to cause working movement of the ram and cut-off of the pressurized liquid supply to said driving chamber.

4,250,806

COMPUTER CONTROLLED INSPECTOR/PRINTER DOCUMENT INSPECTION

Bert Boyson, Englewood, N.J.; Terence J. Gallagher, Brookfield, and William E. Porsche, Ridgefield, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 27, 1978, Ser. No. 964,108
Int. Cl.³ B44B *5/00*; B41F *33/16*
U.S. Cl. 101—2 **5 Claims**

1. A document processor, comprising in combination;

transport means for moving documents serially along a path including,

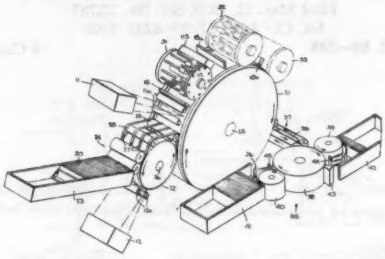
an impression drum,

a transfer drum having a portion of its periphery contiguous to a portion of the periphery of said impression drum,

motor means for rotating said impression drum in the clockwise direction and said transfer drum in the counterclockwise direction,

singler means for feeding documents serially onto said transfer drum,

means for retaining documents on said transfer drum and said impression drum over a portion of their peripheries and for transferring documents from said transfer drum to said impression drum in the contiguous area of their peripheries,



flaw detection means disposed adjacent said path for detecting flaws in said documents,

printing means disposed adjacent said path for printing selectable indicia on said documents,

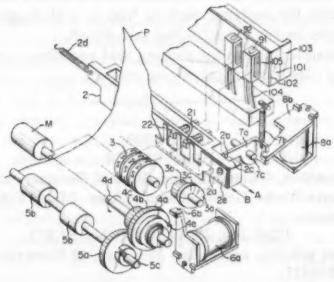
control means connected to said printing means responsive to said flaw detection means preventing said printing means from printing on flawed documents.

4,250,807

HIGH SPEED PRINTER WITH STAIN PREVENTING MEMBER BETWEEN ALTERNATELY SPACED HAMMERS

Hiroatsu Kondo, Zushi; Mineo Nozaki, Kawasaki; Toshiaki Ozawa; Osamu Asakura, both of Tokyo, and Shigeru Okamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha and Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Jul. 11, 1978, Ser. No. 923,731
Claims priority, application Japan, Jul. 11, 1977, 52/82730
Int. Cl.³ B41J *9/12*
U.S. Cl. 101—93.09 **2 Claims**



1. A printing apparatus comprising:

a motor;

a character drum connected to said motor for rotation thereby and having a surface provided with columns each having characters thereon and supplied with ink;

a group of main hammers disposed opposite the drum surface;

means operatively connected to said motor for feeding printing paper between said group of main hammers and said drum surface, by the rotational force of the motor;

a group of intermediate hammers disposed between said group of main hammers and the character drum on a one

hammer-to-two columns basis, said hammers disposed opposite alternate columns of characters;

stain preventing means disposed between said character drum and said paper, said stain preventing means having portions in said print line which overlie the alternate columns of characters on said character drum at positions between said hammers, whereby said stain preventing means shield the columns on said character drum adjacent a column bearing a character to be printed by actuation of an intermediate hammer; and

means operatively connected to said motor for shifting integrally said group of intermediate hammers and said stain preventing means by one column to facilitate printing along a line at each column on printing paper adjacent said drum surface upon actuation of said group of main hammers.

4,250,808

PRINTER

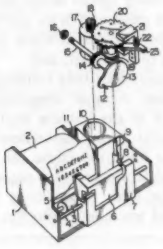
Akira Katsura, Amagasaki; Kiyoshi Nakata, and Shoei Sakashi, both of Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 23, 1979, Ser. No. 14,768

Claims priority, application Japan, Feb. 27, 1978, 53/22647; Feb. 27, 1978, 53/22648; Feb. 27, 1978, 53/22649

Int. Cl.³ B41J *1/50, 9/04*

U.S. Cl. 101—93.15 **5 Claims**



1. A printer having a printing head, a drive unit including a motor, a head driving mechanism driven by said drive unit and arranged to have said printing head to make a linear reciprocal movement between terminal ends of each line to be printed, and a paper feed mechanism, said head driving mechanism comprising:

i. a driving cam rotated about an axis by said drive unit;

ii. a pin attached to said driving cam;

iii. a slide block carrying said printing head through a head holder and arranged to make a linear reciprocal movement;

iv. first, second, third and fourth grooves formed in said slide block, said first through fourth grooves being successively connected so as to form a leaf-shaped groove along which said pin slides upon the rotation of said driving cam, each of said first through fourth grooves consisting of an arcuate groove having a radius of curvature substantially equal to that of the locus drawn by said pin upon the rotation of said driving cam;

v. a pair of auxiliary pins attached to said slide block and arranged to periodically cooperate with said driving cam upon the rotation of the latter so as to assist said pin in its smooth transition from said first groove to said second groove and from said third groove to said fourth groove, thereby to have said slide block make a linear movement at a constant speed except at the terminal ends of the linear reciprocal movement.

4,250,809

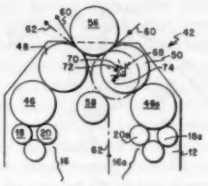
PERFECTING OR MULTICOLOR OFFSET PRINTING PRESS

Donald A. Pullen, San Diego, Calif., assignor to Publishers Equipment Corporation, Dallas, Tex.

Filed Aug. 21, 1979, Ser. No. 68,414

Int. Cl.³ B41F *13/28, 13/40, 7/10*

U.S. Cl. 101—177 **3 Claims**



1. In a web offset printing press unit, the combination comprising:

a frame;

a pair of plate cylinders laterally spaced in the frame for mounting printing plates thereon;

means for applying films of ink to the plates;

a first and a second blank cylinder; spaced apart, inclined toward one another with respect to the plate cylinders;

a common impression cylinder substantially equal distances from the plate cylinders wherein the first blanket cylinder has a position for rolling contact with its plate cylinder and the common impression cylinder for applying an inked image to one side of a web fed between it and the common impression cylinder;

an auxiliary impression cylinder located in near proximity to the second blanket cylinder;

a means for bodily swinging the second blanket cylinder through a short radius arc between a first position in rolling contact with its plate cylinder and the common impression cylinder for applying an inked image on the same side of a web as the first blanket cylinder when the web is fed about the common impression cylinder and a second position in rolling contact with its plate cylinder and the auxiliary impression cylinder for applying an inked image on the opposite side of a web as the first blanket cylinder when the web is fed between both blanket cylinder-impression cylinder pairs; and

means for driving the cylinders with provision for reversing the direction of rotation of one of the blanket cylinders and its cooperating cylinders in the respective modes of operation.

4,250,810

CENTRIFUGAL CLAMP ON A HIGH SPEED PRINT DRUM

Raymond L. Fowler, Boulder, Colo.; David W. Leach, Lexington, Ky., and Lowell T. Sloan, Fort Lauderdale, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 25, 1979, Ser. No. 78,976

Int. Cl.³ B41F *21/04, 27/12*

U.S. Cl. 101—410 **23 Claims**

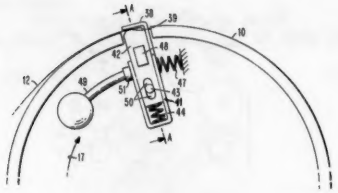
1. In a machine having a rotary carrier, apparatus for tightening the grip on and pulling an edge of a flexible sheet held on said rotary carrier comprising;

a clamp, having outer gripping means for gripping the outer surface of said flexible sheet, inner gripping means for gripping the inner surface of said flexible sheet, and means for biasing said outer gripping means and said inner gripping means against one another to grip said edge of said flexible sheet on said rotary carrier,

means for mounting said clamp for limited concurrent move-

ment of said inner gripping means and said outer gripping means in a single direction, and

means for rotating said rotary carrier to produce a first centrifugal force between said inner and outer gripping means and a second centrifugal force on said clamp, said first centrifugal force producing a grip-tightening force between said inner and outer gripping means in a direction



additive to the force developed by said biasing means so as to tighten the grip of said clamp on the edge of said flexible sheet, and said second centrifugal force producing a sheet-pulling force on said clamp to cause said inner gripping means and said outer gripping means to move concurrently, so that said clamp pulls upon the edge of said sheet so as to stretch said sheet tightly on said rotary carrier.

4,250,811

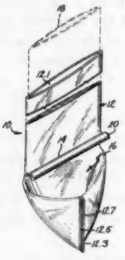
BLAST HOLE LINER

Ilia J. Mackey, Iron, Minn., assignor to Mesabi Jobbers, Inc., Virginia, Minn.

Continuation-in-part of Ser. No. 805,789, Jun. 27, 1977, abandoned. This application Oct. 27, 1978, Ser. No. 955,380

Int. Cl.³ F42B 3/00

U.S. Cl. 102—24 R **13 Claims**



1. A blast hole liner with an integral weight pocket comprising a single length of waterproof, flattened, longitudinal tubing having an open upper end and a lower end portion terminating in a bottom edge folded about its midpoint to define two halves with the edges of the halves joined together to define an upwardly open pocket to receive weighting material, and means providing a stiffening waterproof seal extending transversely of the lower end portion of the tubing adjacent the weight pocket and above said mid-point.

4,250,812

UNDERTRACK FABRIC APPLICATOR

Lawrence D. Trottochau, Loretto, Minn., assignor to Loram Maintenance of Way, Hamel, Minn.

Filed Oct. 11, 1979, Ser. No. 83,826

Int. Cl.³ E01B 1/00, 37/00

U.S. Cl. 104—2 **15 Claims**

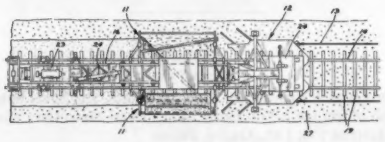
1. An undertrack fabric applicator for use on a railway undertrack maintenance machine of the type which raises track above the track bed as it moves along the track, comprising:

a pair of spaced apart arms connected to one side of the maintenance machine frame immediately behind the track raising portion thereof, the arms extending outwardly from the machine frame,

a bar connected across the outer end of each arm in a substantially vertical position with respect to the track bed, the bars being adapted for rotatably mounting of a roll of fabric between the arms, with the lower ends of the bars extending below the level of the raised track,

an extension member connected to the lower end of the bar of each arm and extending outwardly in a substantially horizontal position with respect to the track bed,

an idler roller connected across the arms from the outer end of one extension member to the other;



a tension roller connected across the arms below the level of the fabric roll,

holding means disposed on the side of the maintenance machine opposite that on which the pair of arms are connected, the holding means being positioned and adapted for securing the outer end of an applicator tube extending diagonally under the raised track from one side of the machine frame to the other, and

a non-rotatable applicator tube running from the outer end of one extension member diagonally under the raised section of track to the holding means on the other side thereof, such that during movement of the maintenance machine on the track the fabric can be continuously unrolled from the fabric roll and passed under the tension roller, over the idler roller, over the applicator tube, under the raised track, and onto the prepared track bed.

4,250,813

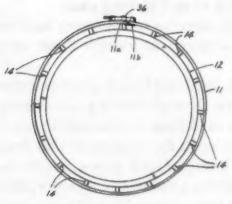
TRACK APPARATUS

Clyde M. Slavens, and Edward A. Clavin, both of Houston, Tex., assignors to Midcon Pipeline Equipment Co., Houston, Tex.

Filed May 30, 1978, Ser. No. 910,353

Int. Cl.³ E01B 25/08

U.S. Cl. 104—118 **19 Claims**



1. Track apparatus, comprising a track strip of uniform width curved for connection end-to-end and adapted to be disposed about an outwardly curved object, connection means for releasably connecting the opposite ends of said track strip together, and plural spaced bar means affixed across the inner side of said track strip for supporting said track strip spaced from the outer surface of the object, each said bar means having inwardly biased pin means for engaging said object when

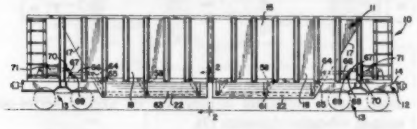
said track strip is connected about said object, and including means for adjusting the inward bias of each said pin means.

4,250,814

DUAL HOPPER CAR DOORS

Marvin Stark, Houston, Tex.; Steve L. Suvada, Canfield, and Herman A. Aquino, Diamond, both of Ohio, assignors to Pullman Incorporated, Chicago, Ill.

Filed Nov. 2, 1978, Ser. No. 957,255
Int. Cl.³ B61D *7/04, 7/18, 7/28*
U.S. Cl. 105—251 **14 Claims**



1. A railroad hopper car comprising a longitudinally extending hopper structure having a downwardly facing discharge opening,

first and second doors hingedly connected to said hopper for downward and outward swinging movement to an open position;

linkage means interconnecting said doors for conjoint movement; and

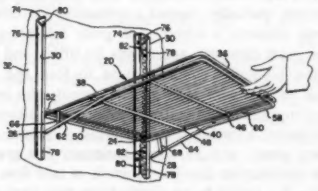
said first door comprising a channel shaped member including a first longitudinal plate portion and a first hopper adjacent flange extending from one end of the longitudinal portion and a first free end flange extending from the other end of the longitudinal portion, each flange having an inwardly extending first free end portion directed toward the other free end portion, and said second door comprising a channel shaped member including a second longitudinal plate portion and a second hopper adjacent flange extending from one end of the second longitudinal portion and a second free end flange extending from the other end of the second horizontal portion, the second hopper adjacent end flange having an outwardly extending second free end portion and said second free end flange having an inwardly directed second free end portion, whereby the inwardly directed end portions of each door at the distal end are adjacent when the doors are closed.

4,250,815

CANTILEVERED SHELF AND SUPPORTING MEANS

Richard H. Swanson, Manitowoc, Wis., assignor to White Consolidated Industries, Inc., Cleveland, Ohio

Filed Aug. 4, 1978, Ser. No. 931,101
Int. Cl.³ A47B *9/00*
U.S. Cl. 108—108 **20 Claims**



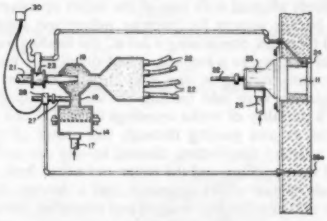
1. A cantilevered shelf and support construction comprising: at least one planar shelf means, with means rigid with the upper rear of said shelf means providing a short lateral trunnion like projection extending from adjacent each top rear corner of said shelf means and rearwardly disposed abutment means depending from the sides of said planar shelf means to a location below said projections and in front of a plane through the forward surface of said projections and perpendicular to the planar shelf means; and at least a pair of parallel spaced apart vertically disposed elongate shelf support brackets secured to a vertical surface, each bracket having a front laterally projected portion facing and spaced forward from the vertical surface, the central portion of said lateral portion providing an elongate vertical abutment surface for an associated one of said shelf abutment means, the lateral portions of said pair of brackets facing each other and having their under portions provided with a plurality of matched, spaced apart, open ended slots opening toward and spaced from the vertical surface a distance greater than the cross-section dimension, in a fore and aft direction, of said projections; said projections being received in a matched pair of said slots with said abutment means engaging associated said abutment surfaces, the projections being maintained in the slots by the downward force of said shelf means fulcrumed on said abutment means; whereby said shelf means can be repositioned by upward tilting and rearward shifting of said shelf means to remove the projections from engagement with associated said slots and permitting vertical repositioning of the shelf means to a different location.

4,250,816

PARTICULATE SOLID FUEL COMBUSTION SYSTEM

John S. Angevine, Pittsburgh, Pa.; Scott W. Frame, Anniston, Ala., and Stephen B. Yacura, Glenshaw, Pa., assignors to Pullman Incorporated, Pullman Swindell Division, Pittsburgh, Pa.

Continuation of Ser. No. 687,005, May 17, 1976, abandoned.
This application Dec. 16, 1976, Ser. No. 751,118
Int. Cl.³ F23K *3/02*
U.S. Cl. 110—101 CF **8 Claims**



1. A particulate solid fuel combustion system comprising:

(a) fluidized bed conveyor means having operably connected thereto a source of air for fluidizing the fuel within said conveyor,

(b) a controlled delivery system for delivery of said fuel to said conveyor,

(c) a plurality of duct means operably connected to said conveyor, each said duct means having plenum means at the end opposite the connection to said conveyor,

(d) primary air duct means operably connected to each said plenum to cause said fuel to enter said plenum from said conveyor,

(e) valve means operably connected to said primary air duct means for controlling the flow of primary air through said conduit means and into said plenum,

(f) fuel delivery means operably connected to said plenum and to the burners of a kiln through which said fuel is delivered by said air from said plenum to said burners; and

(g) heat sensing means within the firing zone of said kiln said heat sensing means operably connected to said valve means within said primary air conduit means to regulate said control valve means with relation to the temperature of said kiln.

4,250,817

BURNER FURNACE FOR SOLID FUELS AND A METHOD OF BURNING DIFFERENT KINDS OF SOLID FUEL IN THIS FURNACE

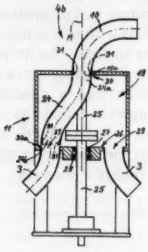
Walter Michel, Murg, Baden, Fed. Rep. of Germany, assignor to Thermo Murg K.G., Murg, Baden, Fed. Rep. of Germany

Filed Oct. 10, 1978, Ser. No. 950,537

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1978, 2815486

Int. Cl.³ F23K *3/02*

U.S. Cl. 110—104 R **29 Claims**



1. A furnace having a plurality of burners for the combustion of pulverized solid fuel material, and a device for feeding a stream of an air-fuel mixture to said furnace, comprising at least one fuel distributor having an inlet opening communicating with the feeding device, a plurality of outlet openings uniformly arranged about an axis passing through the center of said inlet opening and communicating with said burners; and a distributing channel supported for rotation about said axis and having one end thereof permanently aligned with said inlet opening and the other end thereof being offset from said axis to be selectively aligned with one of the outlet openings.

24. A burner system for burning pulverized solid fuel in industrial furnaces, comprising a device for feeding a stream of an air-fuel mixture to a furnace; a fuel distributor including a closed housing having in one wall thereof an inlet opening communicating with said feeding device via a fixed feeding channel, a plurality of outlet openings formed in the opposite wall about an axis passing through the center of said inlet opening, a rotary distributing channel having one end aligned with said inlet opening and the other end offset from said axis to orbit about said outlet openings, and a driving shaft connected to said distributing channel and extending through said housing; and a plurality of burners connected to respective outlet openings in said housing via fixed discharge channels.

4,250,818

SYSTEM UTILIZING A VIBRATORY COMBUSTION BED TO INCINERATE WASTE MATERIAL, OR FUEL

Conrad Sigg, Zurich, Switzerland, assignor to Carl Schenck AG, Darmstadt, Fed. Rep. of Germany

Filed Jul. 14, 1978, Ser. No. 924,688

Claims priority, application Switzerland, Jul. 14, 1977, 8836/77

Int. Cl.³ F23N *7/10*

U.S. Cl. 110—278 **1 Claim**

1. Equipment for burning substances in solid, sludge, or liquid form having

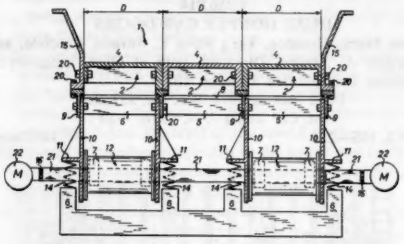
a vibrating combustion bed (1) mounted on springs, the combustion bed including a plurality of stepped profiled sections with air supply means (19),

characterized in that

the vibrating combustion bed comprises a plurality of mutually rigidly joined frames (2) which extend in the direction of feed (A) of the material being combusted;

plate elements (10) extending downwardly from the frame; and

at least two effectively synchronously driven vibration generator groups (12, 13) are provided, operatively connected to the plates of respectively different frames to vibrate the



same, each including a plurality of axially series-connected vibrator elements (7).

4,250,819

STEP GRATE

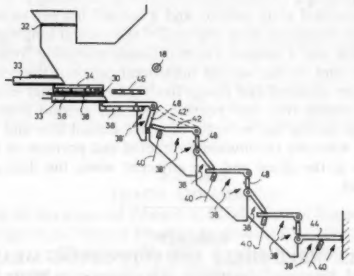
Balduin L. Pauli, Bergstrasse 34, D-8035 Gauting vor München, Fed. Rep. of Germany

Filed Aug. 30, 1978, Ser. No. 938,080

Claims priority, application Fed. Rep. of Germany, Oct. 4, 1977, 2744505

Int. Cl.³ F23B *1/22*

U.S. Cl. 110—281 **11 Claims**



1. In a step grate for combustion of sludge material, including feeding means, a plurality of step grate elements, comprising a vertical stationary element and a horizontal pivotable element, a distributor associated with said feeding means for transporting partially burned combustion material to a first step grate element, a combustion grate following the last of said step grate elements, and means for lifting and stirring said horizontal pivotable element so as to feed the combustion materials to the next step grate element, the improvement which comprises a first stationary flat grate disposed beneath the distributor, a further distributor disposed beneath said first stationary grate, and a second stationary flat grate disposed beneath said further distributor, each of said first and second stationary flat grates being divided into two parts to compensate for heat expansion thereof, and over 80% of the bottom side of each of said first and second stationary flat grates being completely closed, the distributor transporting combustion material from said first stationary flat grate to said second stationary flat grate, and said further distributor transporting combustion material from said second stationary flat grate to said first step grate element.

4,250,820

PROCESS AND APPARATUS FOR OPERATING A FIREBOX WITH SOLID GASIFIABLE FUEL HAVING POOR KINDLING PROPERTIES AND LOW VOLATILE GAS CONTENTS

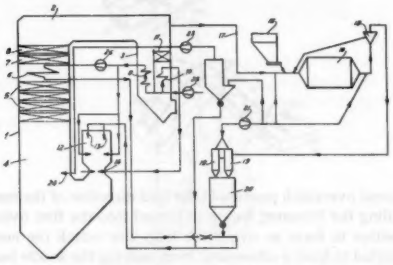
Friedrich W. Lautenschläger, Düsseldorf, Fed. Rep. of Germany, assignor to Vereinigte Kesselwerke AG, Düsseldorf, Fed. Rep. of Germany

Filed Aug. 9, 1979, Ser. No. 65,200

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1978, 2837174

Int. Cl.[3] F23D *1/00*

U.S. Cl. 110—347 21 Claims



1. A process for operating a firebox with comminuted solid fuel having poor kindling properties and low volatile gas contents, the said process comprising

introducing into the firebox the combustion air in at least three separate batches at three successive places as primary, secondary, tertiary, etc. air, the primary air having a temperature of about 500° to 600° C. and compacting a relatively minor amount of the total combustion air, the secondary air having a temperature of about 350° to 400° C., and the tertiary air having a temperature of about 250° to 300° C.,

the fuel being introduced in pulverized form together with the carrier air constituted by the primary air or derived from the secondary or tertiary air,

and withdrawing the ash as a dry discharge.

4,250,821

BUTTONHOLE STITCH CONTROL IN AN AUTOMATIC ELECTRONIC SEWING MACHINE

Nobuyoshi Miyao, Sakurai; Hirotoshi Matsui, Nara; Nobukazu Isoyama, Sakurai; Susumu Nonaka, Yamatokoriyama; Masayasu Makino, Gose; Kazuo Suzuki, Higashiosaka, and Hirokazu Koda, Dose, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 14, 1978, Ser. No. 924,560

Claims priority, application Japan, Jul. 15, 1977, 52-85272; Jul. 15, 1977, 52-85273

Int. Cl.[3] D05B *3/06, 3/02*

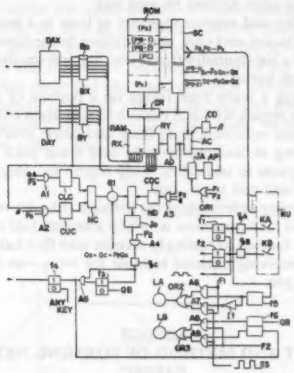
U.S. Cl. 112—158 B 18 Claims

1. In an automatic electronic sewing machine having a buttonhole operation mode which produces a buttonhole having a major longitudinal dimension of a desired length with stitching along juxtaposed first and second edges of the major longitudinal dimension, said buttonhole being produced by shifting the position of a sewing machine needle relative to the medium to be sewn in response to an output signal of a control system, said control system comprising:

first storage means for storing first digital data for conducting a first part of the buttonhole operation mode in a forward direction along said first edge and second digital data for conducting a second part of the buttonhole operation mode in a reverse direction along said second edge;

first control means for reading out said first digital data stored in said first storage means and conducting the first part of said buttonhole operation mode in said forward direction;

second control means for reading out said second digital data stored in said first storage means and conducting the second part of said buttonhole operation mode in said reverse direction;



second storage means for storing information related to said desired length of said buttonhole; and

third control means for controlling said desired length of said buttonhole in accordance with said information stored in said storage means.

4,250,822

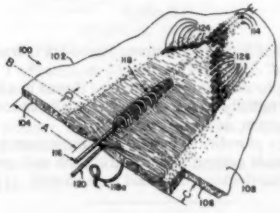
LOW BULK, PIN-TYPE SEAM FOR USE IN PAPER MAKING EQUIPMENT FABRICS, SUCH AS DRYER FELTS

Gisela Fickers, Eupen, Belgium, assignor to Asten Group, Inc., Devon, Pa.

Filed Dec. 6, 1979, Ser. No. 100,946

Int. Cl.[3] D05B *97/08*

U.S. Cl. 112—262.1 27 Claims



1. A method of producing a low bulk, pin-type seam in a multi-ply fabric for use with paper making equipment, comprising the steps of:

(a) providing a length of fabric to be seamed comprising a plurality of longitudinal warp yarns interwoven with a plurality of ply-forming layers of transverse pick yarns, said layers defining at least front and back plys, said length of fabric being of a preselected length which is longer than the desired seamed fabric length;

(b) removing at a preselected fabric position, a preselected number of said pick yarns to create apertures therein which define a fold line which corresponds to the fabric end of one of the sides of the seam to be formed, said apertures being disposed to receive the insertion of a seaming coil, said fold line defining adjacent fabric body and fabric overlap regions on said fabric;

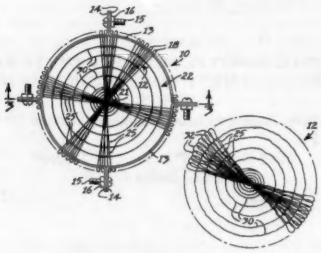
(c) installing a seaming coil by inserting said coil through said apertures:
(d) removing preselected pick yarns from said back ply of said fabric in said fabric body and fabric overlap regions adjacent said coil;
(e) folding at least a portion of said overlap region at said fold line to overlap said fabric body region to form a seaming edge defined by said coil;
(f) stitching said regions together at least in a seam overlap area adjacent said coil, said stitching being disposed along at least a substantially transverse line intermediate ones of said pick yarns;
(g) creating a warp yarn fringe on a portion of said fabric overlap region which is remote to said seam overlap area, by at least removing picks from said fabric overlap region;
(h) drawing at least portions of said warp yarn fringe between yarns in said fabric body region to complete a first half of said coil seam; and
(i) performing at least steps (b) through (h) with respect to a different fabric position whereby a second half of said coil seam is formed to matingly receive said first half to define a pin receiving channel suitable for reception of a seam-joining pin.

4,250,823

PRODUCT AND METHOD OF FORMING NETWORK FABRIC

Elena D. Naum, 1212 N. Graycroft Ave., Madison, Tenn. 37115

Filed Jul. 16, 1979, Ser. No. 57,829
Int. Cl.³ D05B *97/00*
U.S. Cl. 112—266.1 **6 Claims**



1. A method of forming a patterned network fabric comprising the steps of:
(a) laying a plurality of base strands of thread in a base plane generally radially of and circumferentially spaced about a center position, and
(b) stitching a plurality of individual, continuous, circumferential threads generally concentric with said center position and interlocking with said base strands.

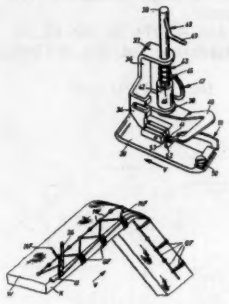
4,250,824

METHOD AND DEVICE FOR FORMING AN OVERCAST SEAM WITH A ZIG-ZAG SEWING MACHINE

Günter Meier, and Rolf Kessler, both of Karlsruhe-Durlach, Fed. Rep. of Germany, assignors to Dorina Nähmaschinen GmbH, Fed. Rep. of Germany

Filed Nov. 20, 1979, Ser. No. 96,249
Claims priority, application Fed. Rep. of Germany, Dec. 2, 1978, 2852299
Int. Cl.³ D05B *1/20, 3/02*
U.S. Cl. 112—269.1 **7 Claims**

1. A method of forming an overcast seam using a zig-zag sewing machine with a needle bar carrying a needle with needle thread movable into first and second overstitch positions and having a looper with bobbin thread and a material feeder for feeding material in a feed direction comprising: forming a first loop of needle and bobbin thread with the needle bar in its first overstitch position; moving the needle bar with needle thread into the second overstitch position leaving a loosened thread length, forming a second loop of needle and bobbin thread with the needle in its second overstitch position; forming at least one straight stitch with the needle bar in its



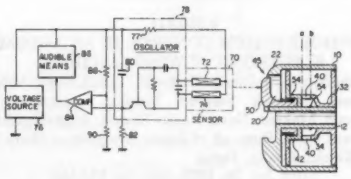
second overstitch position in the feed direction of the material; pulling the loosened length of thread into the first overstitch position to form an overstitch loop into which the needle is inserted to form a subsequent loop; moving the needle bar with needle thread into its first overstitch position to form the subsequent loop; and releasing the overstitch loop.

4,250,825

UNDER THREAD DETECTION FOR SEWING MACHINES WITH AXIALLY SPRING BIASED ROTATABLE MEMBER

Toshibumi Kamiyama, Kadoma, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 1, 1979, Ser. No. 16,494
Claims priority, application Japan, Mar. 2, 1978, 53/24281; Jul. 21, 1978, 53/100930[U]; Nov. 20, 1978, 53/160469[U]
Int. Cl.³ D05B *59/00*
U.S. Cl. 112—278 **16 Claims**



1. A sewing machine comprising a rotary hook having a shaft, a bobbin having a cylinder on which under thread of the machine is wound, a bobbin case having a cylinder detachably mounted on said rotary hook shaft, the cylinder of said bobbin being rotatably and detachably mounted on the cylinder of said bobbin case, said cylinder of said bobbin comprising a larger diameter section having a plurality of axially extending parallel guide slots and a smaller diameter section, a movable member mounted on said bobbin case shaft and slidably received in said guide slots for rotation with said bobbin, said movable member being normally located at one end of said larger diameter section remote from said smaller diameter section when said under thread is present on said larger diameter section, means for urging said movable member toward said smaller diameter section so that the absence of said under thread on said larger diameter section will cause said movable member to axially move toward said smaller diameter section, and means for

detecting the axial movement of said movable member to give a warning indication.

4,250,826

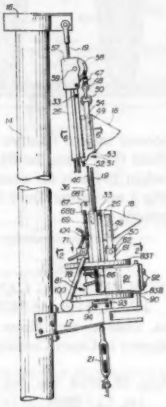
ROLLER FURLING STRUCTURE

Bernard R. Katshen, 745 - 2nd Ave., Redwood City, Calif. 94063

Filed Feb. 21, 1978, Ser. No. 879,217

Int. Cl.³ B63H 9/10

U.S. Cl. 114—106 **6 Claims**



1. In a furling assembly adapted for installation on a stay having a hollow spool rotatable about said stay formed with a first and a second longitudinal bore and first and second slots each extending out to the exterior of said spool from said first and second bore, respectively, a crown block on the top of said spool having a sheave, a furling drum fixed to the bottom of said spool, said drum having a top flange, a sail having a luff, means securing said luff within said first bore, a halyard partially in said first bore extending around said sheave and down said second bore, a traveller in said second bore fixed to the lower end of said halyard, said halyard having an ear extending out through said second slot, said ear formed with an aperture, the improvement which comprises a roller chain, means securing the upper end of said chain to said ear through said aperture, a winch, mounting means mounting said winch on said top flange, said winch having a rotatable member having a pinion having teeth shaped to engage said chain by fitting into spaces between rollers in said chain and tighten said chain as said rotatable member is turned, means to turn said rotatable member and latch means to latch said rotatable member and thereby fix said chain in position, said latch means comprising a pin oscillatable in said mounting means having a handle to turn said pin and a latch, said latch shaped to fit between two of said teeth to restrain rotation of said winch when said latch means is in a first position and to be disengaged from said pinion when said latch means is in a second position.

4,250,827

BOAT MOORING DEVICE

William G. Booker, 3410 Peel St., Suite 1705, Montreal, Canada, and Donald L. Bregoff, 2240 NE. 62 Ct., Ft. Lauderdale, Fla. 33308

Filed Jul. 20, 1978, Ser. No. 926,416

Int. Cl.³ B63B 21/00

U.S. Cl. 114—230 **6 Claims**

1. A boat mooring device comprising:

a base to be mounted to a support surface, said base having a lower surface to rest on a support surface and including an upstanding stem of a first predetermined length and diameter;

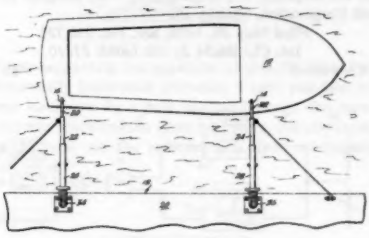
a coil spring of a length greater than said stem and with an inner end zone coiled about said stem and normally extending coaxially therefrom and including an intermediate zone and an outer zone;

means fixing said inner end zone to said base;

an elongate arm having an inner portion and an outer portion and said inner portion being of a diameter to mate within the outer zone of said spring and said inner portion being within the outer end zone of said spring;

means to fix the arm to the outer end zone of said spring;

the arm having an outer arm portion comprising a distal portion and a proximal portion, said distal portion including a first outer end and a second inner end and the proximal portion including a first outer end and a second inner end, means on the first end of said distal portion for connection with a boat,



said proximal portion of said outer arm portion and said distal end of said inner arm portion being telescopically slidable with respect to one another,

means for connecting the telescoping arms together at a predetermined position including diametrical holes through said proximal portion of said outer arm portion and a plurality of axially spaced diametrical holes through said inner arm portion and bolt and nut means sized for receipt through said holes to fix the axial position of said inner and outer arm portions at predetermined locations of extension;

said coil spring means intermediate zone comprising an elbow for bending of said arm relative to said stem.

4,250,828

MARINE ANCHOR

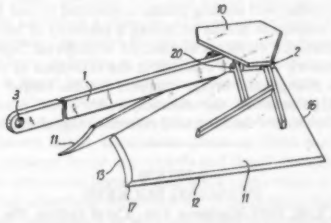
Alain Cota, Paris, France, assignor to Association pour le Transport et l'Affretement-Etablissement Walon S.A., Boulogne-Billancourt, France

Filed Dec. 26, 1978, Ser. No. 972,816

Claims priority, application France, Dec. 23, 1977, 77 39020; Nov. 10, 1978, 78 31847

Int. Cl.³ B63B 21/00

U.S. Cl. 114—307 **9 Claims**



1. A reversible marine anchor comprising a shank having a front and a rear, a base connected to the rear of the shank, two flukes, pivot means pivotally mounting said flukes independently of each other on said base for pivotal movement toward

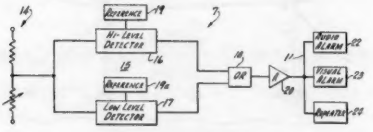
each other with respect to the base, to form a diminishing angle between themselves, wherein said pivot means comprises two axes respectively on opposite sides of the shank which converge toward each other and toward the front of the shank and each form an acute angle with the shank, so that as said flukes pivot toward each other surfaces thereof which face away from each other converge in a direction toward the front of the shank, said flukes pivoting toward each other and digging into the floor of the body of water where the anchor is used, in response to a pull along the shank of the anchor, said converging working faces creating a plow effect to enhance resistance to withdrawal of the anchor.

4,250,829

VAPOR DETECTOR FOR MARINE PROPULSION APPARATUS

Frank H. Stephens, Jr., Morristown, N.J., assignor to Brunswick Corporation, Skokie, Ill.

Filed May 30, 1978, Ser. No. 910,731
Int. Cl.[3] B63H *21/00*; G08B *17/10*
U.S. Cl. 440—1 **11 Claims**



1. A vapor monitor circuit for monitoring the explosive vapor level within an enclosure, comprising a vapor sensing element having a changing electrical resistance with the level of explosive vapors in the surrounding environment and operating at the temperature of the surrounding environment, a comparative resistance network including a reference resistance means connected with said vapor sensing element to a direct current voltage supply means, said reference resistance means including a plurality of reference signal means establishing a plurality of different voltage signals, a window comparator means having a first operational amplifier including a high level reference input means connected to a first of said reference signal means and a second operational amplifier including a low level reference input means connected to a second of said reference signal means and each of said operational amplifiers having a signal input connected to said vapor sensing element, a status indicating means for generating an output indicating the vapor status and having an input, a drive amplifier connected to the window comparator means and having a single output connected to said status indicating means, said window comparator means responding to a signal input above the level of said first reference signal means and a signal below the level of said second reference signal means and generating an alarm signal to turn said driver amplifier fully on and fully off and correspondingly actuate said status indicating means, said comparative resistance network is a multiple legged bridge network having said sensing means connected to one leg, said reference resistance means including a plurality of series connected resistance elements connected in different legs of the bridge network whereby changes in the resistance of the sensing means changes the bridge currents and the output voltage of the bridge network, the common nodes of the plurality of resistance elements defining said reference signal means.

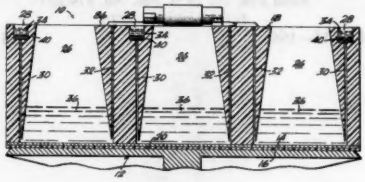
4,250,830

SWINGING BUCKETS

Robert C. Leif, 1030 Mariposa Ave., Coral Gables, Fla. 33146

Filed Oct. 3, 1979, Ser. No. 81,324
Int. Cl.[3] G01N *9/30*; B05C *11/12*
U.S. Cl. 118—52 **7 Claims**

1. A centrifugal cytology bucket for providing multiple dispersions onto a substrate, wherein said bucket includes a substrate carrier adapted for pivotal mounting and further includes a sample block having at least one sample chamber formed therein with a fluid distributing hole defining a liquid path between the sample chamber and a fixative cup, wherein the improvement comprises:



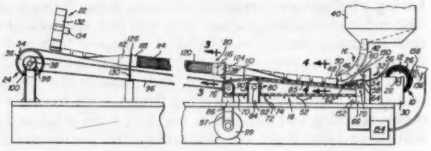
a porous frit disposed in said fixative cup for substantially retarding the fluid flow from the fixative cup to the sample chamber when there is no centrifugal force applied while permitting a substantial fluid flow when a centrifugal force is applied.

4,250,831

APPARATUS FOR PRINTING CANS FROM HEAT TRANSFER PAPER

Danny L. McMillin, Golden, and James S. Stirbis, Littleton, both of Colo., assignors to Coors Container Company, Golden, Colo.

Filed Sep. 18, 1978, Ser. No. 943,372
Int. Cl.[3] B05C *1/14*
U.S. Cl. 118—669 **18 Claims**



1. An apparatus for continuous transfer of images onto outer surfaces of generally cylindrical members from a sheet material having thereon a series of spaced heat transferable ink images comprising:

roller means for unwinding a roll of said sheet material to provide an unwound intermediate length of the sheet material;

feeder means for feeding the generally cylindrical members into association with said unwound intermediate length of sheet material;

transporting means for transporting, in a downstream direction, said generally cylindrical members in association with the unwound intermediate length of sheet material in a predetermined position relative to the sheet material;

tube means downstream of said transporting means, for wrapping a portion of said unwound intermediate length of the sheet material into ink transfer relationship with each of said generally cylindrical members;

heating means for providing heat to the sheet material to cause the transfer of images onto the outer surfaces of the generally cylindrical members as the generally cylindrical members pass through said tube means;

said portion of said unwound intermediate sheet material becoming unwrapped from the generally cylindrical members downstream of said tube means;

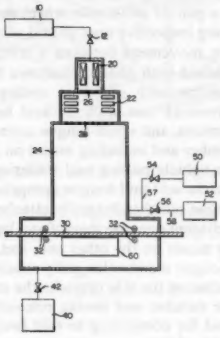
discharge means for removing the generally cylindrical members from the unwrapped, unwound intermediate length of sheet material downstream of said tube means;

takeup means for winding up said sheet material after said generally cylindrical members have been removed from the sheet material.

4,250,832
APPARATUS FOR STORING RADIOACTIVE MATERIALS

Satoru Ozaki, Ichikawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 28, 1978, Ser. No. 964,147
Claims priority, application Japan, Dec. 16, 1977, 52-150618
Int. Cl.[2] C23C *13/08*
U.S. Cl. 118—724 8 Claims



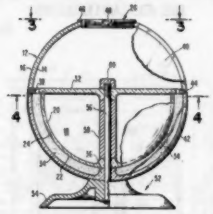
1. An apparatus for storing radioactive materials in a solid material, comprising:
- an ion source for ionizing gaseous radioactive material to be stored;
- an accelerator for accelerating the ionized radioactive material, the accelerator consisting of an electrode group;
- an implantation chamber for housing the solid material into which the accelerated ions of the radioactive material are to be implanted;
- evacuation means connected to the implantation chamber;
- means for introducing at least one metal compound selected from metal halides and metal carbonyls to the vicinity of the solid material;
- means for controlling the temperature of the solid material to fall within the range suitable for decomposing the metal compound to deposit the elemental metal on the surface of the solid material and for permitting implantation of the radioactive material into the solid material simultaneously with formation of a new metal layer on the surface of the solid material; and
- means forming apertures provided between the ion source and the accelerator and between the accelerator and the implantation chamber so as to create a pressure difference between the ion source, the accelerator and the implantation chamber.

4,250,833
ENTOMOLOGICAL APPARATUS

Katsuhiko Waldon, 4000 Shady Oaks Dr., Ooltewah, Tenn. 37363

Filed May 30, 1979, Ser. No. 43,631
Int. Cl.[3] A01K *67/00*
U.S. Cl. 119—1 1 Claim

1. An entomological apparatus to facilitate the observation and study of insects comprising:
- (a) a substantially transparent spherical outer enclosure having inner and outer surfaces;
- (b) a substantially transparent hermispherical inner enclosure having a circular planar wall within the lower half of the first enclosure, the planar wall extending to the inner surface of the first enclosure, thereby maintaining the enclosures concentric with each other to form an environmental chamber between the enclosures and closing off the environmental chamber, the planar wall having insect access holes passing from the upper half of the outer enclosure through the planar wall to the environmental chamber;
- (c) access means through the outer enclosure for enabling placement of insects and environmental elements therein; and

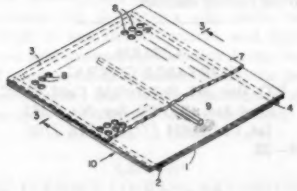


- (d) means supporting the apparatus so that the planar wall is substantially horizontal including a base attached to the outer enclosure by a bolt passing through the base, the outer enclosure and the inner enclosure, thereby maintaining the base and the enclosures in fixed relationship to each other.

4,250,834
PET SANITARY FACILITY

Stephen Cheselka, 87 Columbia St. (Apt. 21-F), New York, N.Y. 10002

Filed Jun. 20, 1979, Ser. No. 50,497
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—1 21 Claims



1. A pet sanitary facility comprising:
- a plurality of liquid impervious, flexible sheets;
- a plurality of liquid absorbing sheets of substantially the same width and length dimensions of said liquid impervious sheets arranged with said liquid impervious sheets to form a stack of a plurality of liquid impervious layers and a plurality of liquid absorbing layers, each liquid absorbing layer including at least one liquid absorbing sheet, and each liquid impervious layer including at least one liquid impervious sheet, said layers alternating with each other such that liquid absorbing layers are interposed between adjacent liquid impervious sheets to form said stack of interleaved liquid impervious and liquid absorbing layers, the uppermost layer of said stack comprising at least one liquid absorbing sheet and the bottom-most layer of said stack comprising at least one liquid impervious sheet;
- a perforated upper platform member of non-liquid absorbant material located above said stack for receiving a pet thereon; and
- means spacing said perforated platform member from said stack of interleaved sheets.

4,250,835

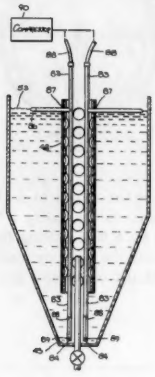
APPARATUS AND METHOD FOR REARING SHRIMP

Charles Dugan, Goulds, and Timothy Dugan, Homestead, both of Fla., assignors to Farm Fresh Shrimp Corporation, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 925,793, Jul. 18, 1978. This application Feb. 16, 1979, Ser. No. 12,860

Int. Cl.³ A01K *61/00*

U.S. Cl. 119—2 **20 Claims**



13. A method of recirculating settled food through the rearing medium of a larvae tank comprising

conveying a mixture of settled food and rearing medium from the bottom of the larvae tank to a discharge point at or above the surface of the rearing medium;

discharging said mixture from said discharge point in a direction such that the force of discharge into the rearing medium has a component parallel to the rearing medium surface and perpendicular to a line radiating from the geometric center thereof, thereby imparting a circular flow to the rearing medium.

4,250,836

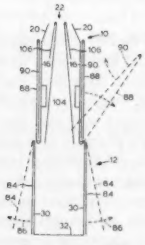
PORTABLE CORRAL

Karl Smith, P.O. Box 347, Bakersfield, Calif. 93307

Filed Jan. 18, 1979, Ser. No. 4,352

Int. Cl.³ E04H *17/18*; A01K *1/02*

U.S. Cl. 119—20 **5 Claims**



4. In a portable corral for confining and directing the movement of livestock having a pair of rigid planar first side members adapted to be disposed vertically in spaced relationship to form a passageway therebetween for the movement of the livestock, each of said first side members having first releasable connector means on one end thereof and trailering means for supporting and transporting said first side members including a horizontal base member, a pair of rigid planar second side members connected to said base member vertically in spaced relationship to form a passageway therebetween for the movement of the livestock, each of said second side members having a second releasable connector means on one end thereof for interconnecting with respective ones of said first releasable connector means to form an extended passageway for the livestock comprising said first and second side members in combination, each of said second side members including support means for holding respective ones of said first side members adjacent thereto for transporting, a pair of wheels for supporting said trailering means when transporting said first side members, a pair of adjustable wheel mounting members rotatably carrying respective ones of said wheels and attached to said base for movement between a transporting position with said base raised with ground clearance for travelling and a deployed position with said base resting on the ground whereby the livestock can walk on said base between said second side members, and a pull-tongue connected on one end to said base member and including means on the other end for connecting to a vehicle pulling said trailering means, the improvement wherein said pull-tongue comprises:

(a) a first tongue member hingedly attached on one end to said base adjacent one side thereof and having said vehicle connecting means on the other end; and,

(b) a second tongue member hingedly attached on one end to said base adjacent the side opposite the attachment of said first tongue member and having releasable means on the opposite end for connecting to said first tongue member adjacent said vehicle connecting means whereby said two tongue members can be connected in a Y-shape for pulling said trailer and can be disconnected and hingedly rotated away from the path of the livestock during deployment with said base resting on the ground; and additionally comprising,

(c) said base member of said trailering means tapering towards the points of attachement of said first and second tongue members respectively on each side of said end having said pull-tongue thereof;

(d) a pair of rigid planar third vertical side members connected to respective ones of said second side members on one end and tapering towards said pull-tongue containing end to form a narrow vertical opening thereat for the restricted passage therethrough of the livestock; and,

(e) a pair of extended rigid planar fourth vertical side members adapted to be slid through said opening for storage within said trailering means during transporting of said corral and including means on one end for releasably hingedly attaching said fourth side members to respective ones of said third side members extending outwardly therefrom to form a loading and unloading chute connected to the corral.

4,250,837

POULTRY NEST BANK UNIT

Allan R. Cocklereece, 18 Chaumont Sq., NW., Atlanta, Ga. 30327

Filed Mar. 14, 1979, Ser. No. 20,421

Int. Cl.³ A01K *31/16*

U.S. Cl. 119—48 **8 Claims**

1. An improved poultry nest bank unit comprising,

first and second molded plastic housing portions;

each housing portion being comprised of a five sided relatively thin walled hollow unit having an open side and an opposite outer side;

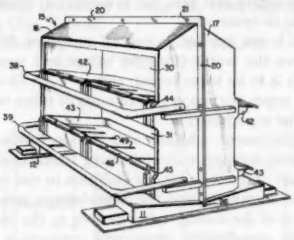
means for securing together the open sides of the housing portions to form a housing unit having a substantially void interior;

a plurality of vertically arranged openings extending transversely across the outer sides of each of the first and second housing portions;

insertable plastic trays extending between corresponding openings in the first and second housing portions and across the interior of the housing unit;

one end of each of said trays extending outwardly beyond the outer side of the second housing portion;

said trays being inclined toward their said one ends,



whereby eggs laid on said trays roll by gravity to said one end of each tray and;

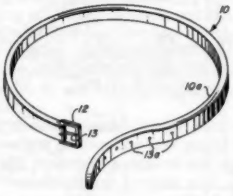
means at said one end of each tray for stopping a rolling egg to collect laid eggs outside said housing unit.

4,250,838

METHOD FOR SYSTEMIC CONTROL OF PARASITIC INSECTS

Jerry E. Ott, Kinston, N.C., assignor to Farnam Livestock Equipment and Insecticides, Inc., Phoenix, Ariz.

Filed Jul. 16, 1979, Ser. No. 57,794
Int. Cl.[3] A01K *27/00, 29/00*
U.S. Cl. 119—106 **1 Claim**



1. In a method for control of parasitic insects on animals including the step of:

placing a collar-shaped thermoplastic substrate around the animal's neck which carries an insecticidally active ingredient,

the improvement whereby such insect control is attained systemically, comprising the steps of:

(a) forming said thermoplastic substrate from an extrusion mixture of polyvinylchloride, a plasticizer and from about 7.5 to about 15% by weight of chlorpyrifos, said extrusion mixture being free of trivalent nitrogen compounds, alkyl amines or amides;

(b) extruding said mixture to form an animal collar;

(c) providing fastener means for said collar; and

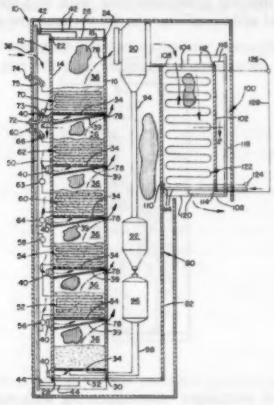
(d) placing said collar around the neck of an animal and adjusting said fastener means to maintain at least the inner surface of said collar in contact with the neck hair and skin of the animal such that chlorpyrifos which bleeds to the surface of said collar in the liquid phase directly contacts said neck hair and skin and is absorbed into the animal's bloodstream and establishes and maintains an insecticidally effective concentration of chlorpyrifos in the animal's bloodstream and on said hair and skin of the animal.

4,250,839

VAPOR GENERATOR UTILIZING STACKED FLUIDIZED BED AND A WATER-COOLED HEAT RECOVERY ENCLOSURE

Ernest L. Daman, Westfield, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Feb. 28, 1979, Ser. No. 16,264
Int. Cl.[3] F22B *1/02*
U.S. Cl. 122—4 D **27 Claims**



1. A vapor generator comprising a furnace section, means defining a plurality of vertically aligned fluidized beds in said furnace section, one boundary wall of said furnace section having openings therein for permitting the discharge of effluent gases from said fluidized beds, means including said one boundary wall for defining a heat recovery enclosure adjacent said furnace section for receiving said effluent gases, and a convection enclosure disposed adjacent said heat recovery enclosure for receiving said effluent gases from said heat recovery enclosure and discharging said gases, each of the boundary walls of said furnace section, said heat recovery enclosure and said convection enclosure being formed by a plurality of interconnected tubes, and means for passing fluid through said boundary walls in a predetermined sequence to transfer heat from said fluidized beds to said fluid.

4,250,840

BLAST FURNACE COOLING ARRANGEMENT

Gennady A. Kudinov, ulitsa Geroev Truda, 20a, Kv. 98; Evgeny E. Lysenko, ulitsa Novgorodskaya, 38/44, Kv. 3; Oleg V. Filipiev, prospekt Pravdy, 5, Kv. 4/b; Grigory I. Kasyanov, prospekt Lenina, 64b, Kv. 63; Jury I. Tseluiko, prospekt, Lenina, 17, Kv. 55; Yakov I. Gorodetsky, ulitsa Sotsialisticheskaya, 72, Kv. 34, all of Kharkov, and Viktor D. Kotlyar, ulitsa 1 Maya, Juzhny Kharkovskoi oblasti, all of U.S.S.R.

Filed Feb. 15, 1979, Ser. No. 12,452
Int. Cl.[3] F22B *37/00*
U.S. Cl. 122—6 A **5 Claims**

1. A blast furnace cooling arrangement comprising:

(a) a cooling screen disposed in an annular space between a furnace shell and a lining and formed by vertically arranged rows of plates provided with series-connected main internal ducts and additional internal ducts communicating vertically and having common inlets and common outlets;

(b) drum separators mounted above said cooling screen and communicating with said common inlets and outlets of said main and additional ducts of said plates of each vertical row;

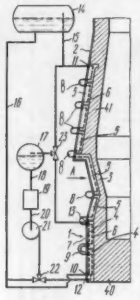
(c) take-off pipelines connecting said common outlets of said

main and additional ducts of said plates of each vertical row with said drum separators;

(d) supply pipelines connecting said drum separators with said common inlets of said main and additional ducts of said plates of each vertical row and forming with the above elements a closed circuit of natural circulation of a cooling medium;

(e) circuits of forced circulation, each of which is closed at said common inlet and outlet of said additional ducts in a respective vertical row of said plates and comprises:

(1) a container communicating with said common outlet of said additional ducts in the vertical row of said plates;



(2) a heat exchanger communicating with said container; and

(3) a pump communicating through its inlet with said heat exchanger and through an outlet, with the common inlet of said additional ducts in the vertical row of said plates; and

(f) distributing valves mounted at said common inlets and outlets of said additional ducts in the vertical rows of said plates to selectively connect the additional ducts to the circuits of natural circulation in normal operating conditions and to the circuits of forced circulation during emergency conditions.

4,250,841

DEVICE FOR DRYING AND SUPERHEATING STEAM

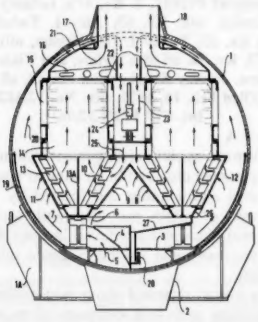
Roger Bessouat; Jacques Marjollet, both of Paris, and Gerard Palacio, Montmorency, all of France, assignors to Societe Anonyme dite: Stein Industrie, Velizy-Villacoublay, France

Filed Apr. 24, 1979, Ser. No. 32,805

Claims priority, application France, Apr. 28, 1978, 78 12634

Int. Cl.[3] **F22G** *1/00;* **F28F** *9/22*

U.S. Cl. 122—483 **2 Claims**



1. A device for drying and superheating steam, in particular for supplying steam to a high power turbine, said device including a cylindrical casing having a horizontal axis, a wet steam inlet opening to the bottom of said cylindrical casing, a superheated steam outlet opening to the top of said casing, said device further including the following disposed, inside the casing, parallel to said axis, and symmetrical about its longitudinal plane of symmetry:

a. in its lower portion, a pair of separator devices which remove the water from the water and steam emulsion which is to be superheated; and

b. in its upper portion; a pair of nests of tubes which constitute the superheaters,

the improvement wherein said device further comprises members forming with said casing lateral channels allowing part of the water-steam emulsion to rise on either side of the separators and the superheaters near the inside surface of the casing, tubes passing to the outlet passage for the superheated steam and connecting said lateral channels with central funnels, said central funnels being connected with the inlet of the separator devices near the plane of symmetry allowing part of the steam-water emulsion to fall into the space between the nests of superheater tubes downwardly to said inlet of said separator devices.

4,250,842

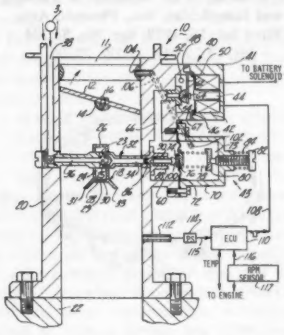
ELECTRONIC INJECTION CARBURETOR

Robert W. Sutton, Elmira, N.Y., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 7, 1977, Ser. No. 849,054

Int. Cl.[2] **F02M** *3/00;* **F02B** *33/00*

U.S. Cl. 123—472 **15 Claims**



1. An electronic injection carburetor for an internal combustion engine having an intake manifold which receives fuel from a pressurized fuel supply, said carburetor comprising:

a carburetor body with a throat for communicating air inducted from the atmosphere to the intake manifold of at least one cylinder of the engine;

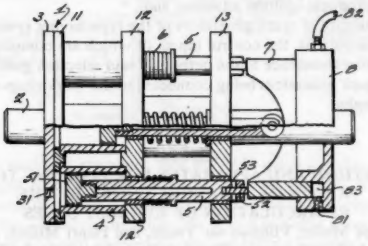
discharge means for mixing a metered amount of injected fuel with the inducted air, said mixing forming a combustible charge in said throat of said carburetor of a desired air/fuel ratio which is thereafter drawn into the intake manifold; and

means for metering said amount of injected fuel from the pressurized fuel supply to said discharge means, said metering means including a fuel injector for primary fuel metering from the supply; said fuel injector supplying metered amounts of fuel at a rate proportional to the speed and manifold absolute pressure of the engine; and said metering means further including an actuator for secondary fuel metering, said actuator receiving said primary metered fuel from said fuel injector and metering said primary metered fuel proportionally to the mass air flow of inducted air through the throat of the carburetor.

4,250,843
ENGINE WITH REVOLUTIONARY INTERNAL-COMBUSTION UNIT AND COMPRESSION RATIO AUTO-CONTROLLED DEVICE

Shiunn C. Chang, 18 Cherng Hwang La., Hwa Nan Sub-ward, Chang Hua City, Taiwan

Filed Aug. 22, 1978, Ser. No. 935,845
Int. Cl.³ F02B 57/00
U.S. Cl. 123—43 AA **4 Claims**



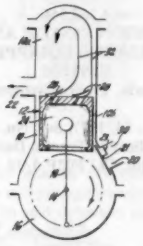
1. Internal combustion engine comprising:
a wheel rotor having a longitudinal axis of rotation;
at least one internal combustion cylinder secured upon said rotor parallel to said longitudinal axis such that said at least one cylinder revolves with said rotor;
said at least one cylinder having an internal combustion chamber, and a top port communicating with said chamber and a piston and piston rod reciprocally moveable in said chamber;
a side housing disposed in confronting relation with the top port of the combustion chamber of said at least one cylinder, said housing having three openings including an intake port, an exhaust port and an aperture for functionally receiving a combustion promoting device, said three openings being positioned in functional relation to said at least one cylinder for respectively receiving gas into said chamber, evacuating burned gas from said chamber and communicating with said gas in said chamber to promote ignition thereof, as said cylinder revolves across the respective openings;
a substantially saddle-shaped circular cam having a top undulating surface confronting said piston rod such that said piston rod reciprocates against said surface causing said at least one cylinder to revolve; and
oil base receiver means for cushioning said cam when said piston rod reciprocates thereon, said cushioning means including a receiver member having a closed circular channel formed therein for closely receiving said circular cam, said receiver member further comprising a oneway oil supply valve for supplying oil to said channel and an oil pressure relief valve connecting to said channel so as to automatically control the pressure of said oil, thereby automatically controlling the combustion ratio of gas in said combustion chamber.

4,250,844
TWO-CYCLE ENGINE AND PISTON

Jan H. Tews, 47 McGuinness Blvd., Brooklyn, N.Y. 11222

Filed Apr. 5, 1979, Ser. No. 27,453
Int. Cl.³ F24B 13/04
U.S. Cl. 123—73 AV **24 Claims**

17. An improved internal combustion two-cycle engine having an engine block which encloses a crankcase adjacent at least one engine cylinder having at least one exhaust port in its upper portion and containing a piston assembly which is slidable within said cylinder and pivotally connected by a connecting rod assembly to a crankshaft rotatably mounted in said crankcase for translating linear travel of the piston to rotation of the crankshaft, each said piston assembly partitioning its corresponding engine cylinder into a generally upper cylinder portion and a generally lower cylinder portion which is adjacent the crankcase, wherein the improvement comprises:
at least one intake port formed in said crankcase and coupled to a source of any desired combustion constituents;
pressure sensitive intake valve means mounted in said crankcase for controlling flow through said intake port, said intake valve means opening said intake port to allow a fresh charge of said combustion constituents to be drawn into said crankcase during each return stroke of said piston and closing said intake port during each power stroke of said piston;
at least one charging passage extending through each said piston to provide communication between the lower cylinder portion and the upper cylinder portion provided by the piston; and

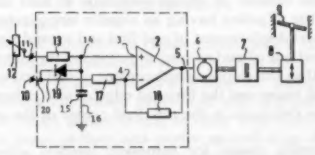


generally resilient pressure sensitive valve means mounted to the top of each said piston, said valve means having a free end portion positioned for controlling flow through at least one said charging passage, said free end portion adapted to deflect upwardly in response to a greater pressure from below said pressure sensitive valve than from above, to permit flow of a fresh charge of combustion constituents into said upper cylinder portion, yet substantially preventing flow into said upper cylinder portion when pressure below said pressure sensitive valve does not generally exceed that from above.

4,250,845
DEVICE FOR THE CONTROL OF THE POSITION OF AN ELEMENT OF AN INTERNAL COMBUSTION ENGINE WHICH INFLUENCES THE FUEL-AIR MIXTURE

Harald Collonia, Königstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 14, 1979, Ser. No. 20,292
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812156
Int. Cl.³ F02D 11/10
U.S. Cl. 123—361 **3 Claims**



1. In a device for the control of the position of an element of an internal combustion engine, which element influences the fuel-air mixture, particularly for rotational speed control, and which element is coupled with a servomotor, the latter being fed by the output of a differential amplifier, with an actual value input of the differential amplifier being in connection with an actual value transmitter and a desired value input of

the differential amplifier being connected with a desired value transmitter, the improvement comprising

a diode connected in the forward conducting direction is arranged from the desired value input to the actual value input, and a resistor is connected between a junction point of the desired value input with said diode and the desired value transmitter,

a grounded line,

a capacitor is arranged between said junction point of the desired value input with said diode and said grounded line, and

said capacitor together with said resistor between said junction point and the desired value transmitter forms a resistor-capacitor combination.

4,250,846

ELECTRONIC IGNITION SYSTEM AND AN INTERNAL COMBUSTION ENGINE EQUIPPED WITH THIS SYSTEM

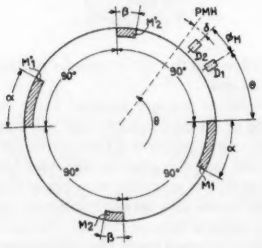
Christian Menard, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 14, 1977, Ser. No. 860,492

Claims priority, application France, Dec. 17, 1976, 76 38128

Int. Cl.³ F02P *5/16*

U.S. Cl. 123—414 **8 Claims**



1. An electronic ignition system for an internal combustion engine including a crankshaft, an even number of pistons coupled to said crankshaft, and a like even number of cylinders associated respectively with said even number of pistons, each cylinder including a sparkplug, wherein said electronic ignition system comprises:

a transducer means for monitoring the position of the pistons, said transducer means being physically coupled to the engine crankshaft and generating two identical trains of electric pulsed signals, a first and a second signal train, said first signal train being angularly displaced with respect to said second signal train by a quantity at least equal to the maximum angle of dynamic advance of the engine, each of said first and second signal trains being formed by pulses having equally angularly spaced leading edges, and having predetermined angular lengths, the number of pulses per revolution of the crankshaft being equal to half of the number of engine cylinders, at least one of said number of pulses having an angular size greater than the angular displacement of said first and second signal trains, at least one of said number of pulses having an angular size less than the angular displacement of said first and second signal trains and the forward edge of said pulses having a phase reference to the top dead center of the engine pistons;

a controller means for automatic ignition advance, said controller means generating control signals for the instant of ignition of the engine and comprising two control channels, a first channel and a second channel, the first channel being synchronized by said first signal train, the second channel being synchronized by said second signal train;

an electronic distributor means for said control signals for the instant of ignition of the engine, said distributor means being connected to said transducer means for monitoring the position of the pistons and comprising, connected in series, a logical coincidence circuit of said first and second signal trains and a counter having a number of stable output states equal to half of the number of cylinders, said counter being incremented by said control signals for the instant of ignition of the engine, and associated in parallel, a plurality of selection gates connected in correspondence to the outputs of said counter, said selection gates having common inputs connected to said controller means for automatic ignition advance; and

a plurality of spark generators of the type having symmetrical outputs, the control inputs of which are connected in correspondence to the outputs of said selection gates, said spark generators being connected to the spark plugs of the engine.

4,250,847

METHOD AND APPARATUS FOR LIMITING THE ACTION OF A MANUAL CHOKE BY THE RECIRCULATION OF EXHAUST GASES

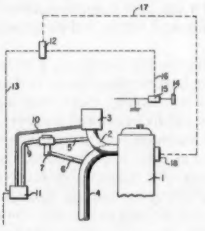
Philippe Mollet, Villebon sur Yvette, and Henri Milliot, Arpajon, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 9, 1979, Ser. No. 37,944

Claims priority, application France, May 9, 1978, 78 13610

Int. Cl.³ F02B *47/08*

U.S. Cl. 123—568 **3 Claims**



2. An apparatus for controlling the richness of the mixture in an internal combustion engine having a carburetor, intake and exhaust manifolds, and a manual choke, said apparatus comprising:

a first conduit connected between said intake and exhaust manifolds;

a vacuum valve in said conduit, said valve being open so as to open said first conduit when said valve is subjected to a vacuum;

a second conduit connected between said vacuum valve and a vacuum source in said carburetor;

an electrovalve in said second conduit, said electrovalve being open so as to open said second conduit when subjected to an electric signal; and

means activated by said choke and the temperature of said engine for transmitting an electric signal to said electrovalve.

4,250,848

FUEL INJECTION SYSTEM

Wolf Wessel, Oberriexingen; Gerhard Stumpp, and Volkhard Stein, both of Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 17, 1979, Ser. No. 4,239

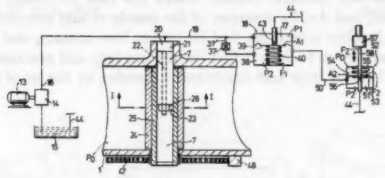
Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805844

Int. Cl.³ F02M *39/00*

U.S. Cl. 123—452 **9 Claims**

1. A fuel injection system for mixture-compressing, exter-

nally ignited internal combustion engines comprising a fuel apportionment valve controllable by an air flow rate meter with the fuel pressure being variable upstream of the apportionment point by means of a pressure regulating valve, said pressure regulating valve including two chambers and a movable valve member for separating said two chambers, means including a throttle point for establishing communication between said two chambers, said movable valve member being arranged to be acted upon on one side by the fuel pressure upstream of said fuel apportionment valve and a spring for applying a force on the other side of said movable valve member, and a control element for also applying a variable control pressure to said movable valve member other side in accordance with the operating characteristics of the internal combustion engine.

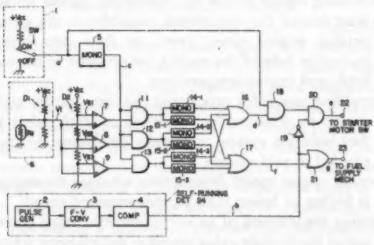


4,250,849

APPARATUS FOR CONTROLLING THE STARTING FUNCTION OF AN INTERNAL COMBUSTION ENGINE

Sadao Takase, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 23, 1979, Ser. No. 32,231
Claims priority, application Japan, Jun. 22, 1978, 53/74844
Int. Cl.³ F02N *17/00*; F02B *5/00*
U.S. Cl. 123—179 G **11 Claims**



1. An apparatus for controlling a starting motor for an internal combustion engine, comprising:

(a) first means responsive to a command signal for initiating operation of the starting motor of said engine for producing a first signal;

(b) second means responsive to said first signal for producing a second signal for a predetermined period of time;

(c) third means for producing a third signal indicating that said engine is in a self-running state; and

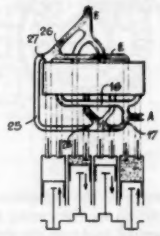
(d) fourth means responsive to said second and third signals for terminating operation of the starting motor of said engine upon absence of said second signal or when said engine is in a self-running state.

4,250,850

REDUCED LOAD WORKING CYCLE FOR A FOUR-STROKE COMBUSTION ENGINE AND ENGINES USING SAID CYCLE

Charles Ruyer, 24 rue Foch, 57390 Audin le Tiche, France

Filed Dec. 21, 1978, Ser. No. 971,685
Claims priority, application France, Dec. 29, 1977, 77 39560
Int. Cl.³ F02B *75/00*; F02G *3/02*
U.S. Cl. 123—198 F **6 Claims**



1. In a four-stroke internal combustion engine having a plurality of cylinders and passage means including valve means for conducting fuel to said cylinders and exhaust gases from said cylinders to the atmosphere:

at least one of said cylinders being operated by said valve means at all times in the conventional four-stroke sequence mode;

at least one other of said cylinders being alternatively operable by said valve means in one of two sequence modes, one of said sequence modes being the conventional four-stroke sequence;

said valve means, when said other cylinder is operated in the other sequence mode, directing exhaust gases from said one cylinder to the other cylinder prior to exhausting said gases to the atmosphere.

6. Method of operating a multiple cylinder four-stroke internal combustion engine in one mode under normal load and in another mode under a low load, comprising the steps of:

operating all of said cylinders in the conventional four-stroke mode when under normal loads, and;

when operating under low loads;

introducing the exhaust gases from at least one of said cylinders into another of said cylinders during the expansion stroke of said another cylinder, and;

releasing said introduced gases to the atmosphere from said another cylinder during the compression stroke of said another cylinder.

4,250,851

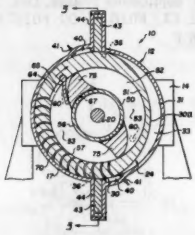
ROTARY PISTON ENGINE

Robert Truck, P.O. Box 83, Revelstoke, British Columbia, Canada

Filed Aug. 20, 1979, Ser. No. 67,922
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—240 **5 Claims**

1. An internal combustion engine comprising a casing having a peripheral wall provided with a circular inner surface, a rotary piston rotatably mounted within the casing, sealing means between the rotary piston and adjacent parts of the casing, said rotary piston having an outer edge partly concentric to the inner surface and partly spaced from said inner surface to provide an intake-compression chamber, said casing having a combustion chamber opposite the outer edge, an intake port on the casing positioned to register with the intake-compression chamber during rotation of the rotary piston, said rotary piston having an expansion-exhaust chamber, an exhaust port on the casing communicating with the expansion-exhaust chamber, a drive flap pivotally mounted on the rotary piston for swinging movement into and out of the expansion-exhaust

chamber between open and closed positions, said rotary piston having a plurality of turbine slots circumferentially spaced apart in a direction extending away from the direction of rotation of said rotary piston, said turbine slots being positioned to sweep successively across the combustion chamber



and connect said chamber to the expansion-exhaust chamber, and a cam member carried by the casing to project into the expansion-exhaust chamber, said cam member being positioned to control movement of the drive flap between the open and closed position in timed relation to ignition of a combustible mixture within the combustion chamber.

4,250,852

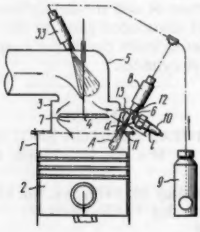
FUEL INJECTION INTERNAL COMBUSTION ENGINE WITH PRECHAMBER TORCH IGNITION

Niyazi Abulkasim ogly Kerimov, ulitsa Chapaeva, 47a, kv. 6; Rafik Israfil ogly Mekhtiev, ulitsa Vneshne-koltsevaya, 10, kv. 169, both of Baku; Lev A. Gussak, Leninsky prospekt, 57, kv. 86, Moscow; Konstantin M. Maskenskov, ploschad M. Gorkogo, 5/76, kv. 33; Garri V. Evart, prospekt Zhdanova, 32, kv. 65, both of Gorky; Malik Akhmed ogly Talybov, ulitsa Pishavari, 31, kv. 19; Ruslan D. Tagiev, ulitsa Chapaeva, 54, kv. 37, both of Baku, all of U.S.S.R.; Nikolai G. Mozokhin, deceased, late of Gorky, U.S.S.R., and by Valentina I. Zubalya, administrator, ulitsa Avtomobilnaya, 16, kv. 36, Gorky, U.S.S.R.

Continuation of Ser. No. 703,507, Jul. 8, 1976, abandoned. This application Oct. 6, 1978, Ser. No. 949,024

Int. Cl.[2] F02B *19/00, 17/00*

U.S. Cl. 123—260 **4 Claims**



1. A fuel-injection internal combustion engine with prechamber-torch ignition, comprising: a combustion chamber, a precombustion chamber; at least one nozzle and at least one channel associated with said precombustion chamber, said nozzle and channel ensuring communication between said precombustion chamber and said combustion chamber; an injector, provided with at least one nozzle, said injector nozzle being arranged in said precombustion chamber and servicing for fuel feed during the process of injection into said precombustion chamber and into said combustion chamber; said precombustion chamber nozzle and said injector nozzle being arranged opposite to each other; said injector nozzle being disposed at a distance from said precombustion chamber nozzle, whereby during the injection process a jet of fuel enters said precombustion chamber nozzle, touching the inner surface thereof whereby the maximum volume of the cone fuel jet in said precombustion chamber constitutes 0.05 to 0.25 of the volume of said precombustion chamber; said volume of the cone fuel jet is the volume defined by "l" and "d" in the formula $V_1=\frac{1}{3}\cdot(\pi d^2/4\ 1)$, where 1=the distance between the tip of said injector nozzle and said sectional area of said precombustion chamber nozzle where the fuel jet comes into contact; and d=the diameter of the nozzle of said precombustion chamber where the fuel jet comes into contact; and said channel serves to draw a fuel-air mixture into said precombustion chamber from said combustion chamber by the jet of fuel

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4,250,853

METHOD AND APPARATUS FOR CONTROLLING THE FUEL SUPPLY OF AN INTERNAL COMBUSTION ENGINE

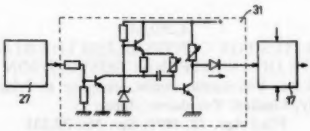
Susumu Harada, and Masakazu Ninomiya, both of Kariya, Japan, assignors to Nippondenso Co. Ltd., Kariya, Japan

Filed Aug. 18, 1977, Ser. No. 825,805

Claims priority, application Japan, Aug. 18, 1976, 51/98413; Aug. 30, 1976, 51/115922[U]

Int. Cl.[3] F02D *31/00*

U.S. Cl. 123—326 **12 Claims**



1. A method for controlling the fuel injection system of an internal combustion engine, comprising the steps of

providing sensor means for generating signals related to at least one of the operational variables in the group comprising: engine speed (rpm), air flow rate through the induction tube of the engine, air pressure in the induction tube, and engine temperature;

providing means for processing the signals from said sensor means to generate fuel injection control pulses for said fuel injection system to thereby determine the fuel quantity fed to said engine;

sensing engine speed; determining whether the engine speed is higher or lower than a predetermined speed:

sensing the position of an engine throttle valve corresponding to the throttle valve opening; determining whether the throttle valve opening is larger or smaller than a predetermined opening;

an engine overrunning condition (negative output torque) when the engine speed is higher than said predetermined speed and simultaneously the throttle valve opening is smaller than said predetermined opening;

interrupting the fuel injection for said engine when said engine is operating in the overrunning condition; and

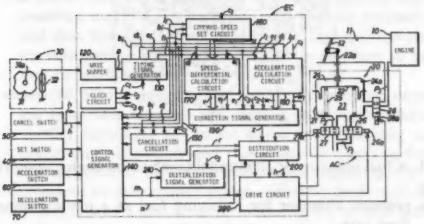
increasing the pulse length of said fuel injection control pulses for a predetermined time after the termination of said overrunning condition, to increase the fuel quantity fed to said engine, over the fuel quantity normally supplied, for said predetermined period of time after the termination of said overrunning condition.

4,250,854

SPEED CONTROL SYSTEM FOR AUTOMOTIVE VEHICLES

Takeshi Matsui, Aichi; Akira Kuno, Oobu, and Yoshio Shinoda, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Dec. 10, 1979, Ser. No. 101,855
Claims priority, application Japan, Dec. 15, 1978, 53-155943
Int. Cl.[3] B60K *31/00*
U.S. Cl. 123—352 9 Claims



1. A speed control system for an automotive vehicle driven by an internal combustion engine under control of a throttle valve, the control system comprising:

first means for producing a timing signal with a period of time responsive to an actual speed of the vehicle;

second means for producing a command signal indicative of a predetermined period of time defined by a desired speed of the vehicle;

third means responsive to the timing signal for calculating a first time difference between the predetermined period of time and an instant period of time of the timing signal and for producing a first differential signal indicative of an absolute value of the calculated first time difference and a first sign signal indicative of one of positive and negative signs of the calculated first time difference;

fourth means responsive to the timing signal for calculating a second time difference between respective instant periods of time of the preceding and following timing signals and for producing a second differential signal indicative of an absolute value of the calculated second time difference and a second sign signal indicative of one of positive and negative signs of the calculated second time difference;

fifth means responsive to the timing signal for calculating a sum of the absolute values when respective signs of the first and second sign signals are identical to each other and for calculating a difference between the absolute values when respective signs of the first and second sign signals are opposite to each other, said fifth means selectively producing first and second correction signals respectively indicative of the calculated sum and the calculated difference, said fifth means ceasing to produce the first and second correction signals when the respective calculated values are zero;

sixth means responsive to the timing signal and one of the first and second correction signals for selectively producing first and second control signals respectively in relation to the positive and negative signs of the second sign signal; and

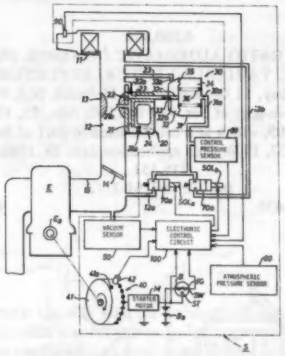
actuator means for decreasing and increasing an opening angle of said throttle valve respectively in response to the first and second control signals.

4,250,855

ELECTRONIC CONTROL SYSTEM FOR CARBURETOR

Tokio Kohama, Nishio; Takeshi Matsui; Akira Nishimatsu, both of Aichi; Kiyoshi Kobashi, Mishima; Hisasi Kawai, Toyohashi; Toshikazu Ina, Okazaki, and Hidetaka Nohira, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Jul. 3, 1979, Ser. No. 54,432
Claims priority, application Japan, Jul. 4, 1978, 53-81363
Int. Cl.[3] F02M *7/24*
U.S. Cl. 123—438 4 Claims



1. An electronic control system for a carburetor adapted to an internal combustion engine, said carburetor including an air induction passage with a venturi portion, a fuel passage supplying fuel from a float chamber into said venturi portion and an air passage permitting the flow of air into said fuel passage to be mixed with the fuel, said control system comprising:

a pneumatically operated servo-motor to be operated by pneumatic pressure applied thereto;

flow control means associated with said servo-motor for controlling the flow quantity of air through said air passage in accordance with changes of the pneumatic pressure applied to said servo-motor;

first means for producing a first electric binary signal indicative of rotational speed of said engine;

second means for producing a second electric binary signal indicative of intake manifold vacuum of said engine;

third means for detecting pneumatic pressure applied to said servo-motor to produce an electric signal indicative of the pneumatic pressure;

a digital computer for repetitively calculating a value indicative of optimum pneumatic pressure to be applied to said servo-motor in accordance with said first and second binary signals, said computer being programmed to calculate the optimum value from a function describing a desired relationship among optimum pneumatic pressure, rotational speed and intake manifold vacuum of said engine and to develop an electric binary signal from said optimum valve;

a digital-to-analog converter for converting said electric binary signal indicative of the calculated optimum value into an electric analog signal;

a drive circuit means for comparing a level of said electric signal from said third means with first and second levels derived from said electric analog signal to produce a first output signal therefrom when said first level is higher than the level of said electric signal from said third means and to produce a second output signal therefrom when said second level is lower than the level of said electric signal from said third means, said drive circuit means ceasing the output signals when the level of said electric signal from

said third means is between said first and second levels; and

first and second electrically operated valves to selectively apply engine intake manifold vacuum and atmospheric pressure respectively to said servo-motor when energized in response to one of said first and second output signals from said drive circuit.

4,250,856

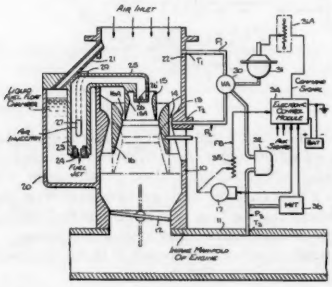
FUEL-AIR RATIO AUTOMATIC CONTROL SYSTEM USING VARIABLE VENTURI STRUCTURE

Harold G. Abbey, 11 Goldsmith Dr., Holmdel, N.J. 07733

Continuation-in-part of Ser. No. 962,883, Nov. 22, 1978, Pat. No. 4,187,805, which is a continuation-in-part of Ser. No. 919,541, Jun. 27, 1978. This application Jan. 25, 1980, Ser. No. 115,551

Int. Cl.³ F02M *7/12*

U.S. Cl. 123—439 **17 Claims**



1. An automatic control system for supplying a fuel-air mixture to the intake manifold of the internal combustion engine of a vehicle for regulating the ratio of air to fuel so that this ratio is optimized for prevailing conditions of engine speed and load, said system comprising:

A. a variable Venturi structure whose inlet is coupled to a source of incoming combustion air and whose outlet is coupled to said intake manifold, said structure including concentric passages constituted by a primary Venturi passage having a throat and leading to a secondary Venturi passage having a variable area throat, and a tertiary Venturi passage having a throat, incoming air flowing through an inlet into all three passages to said intake manifold, and a mechanism for adjusting said variable area throat;

B. a servo motor operatively coupled to said mechanism to adjust said variable throat area;

C. means to supply fuel into said primary passage to intermingle with the air passing therethrough to produce an air-fuel mixture;

D. means communicating with said inlet and the throat of the tertiary passage to sense the pressure difference between that of the air at the inlet and that at the tertiary passage throat to produce a command signal that depends on the velocity of air flow through the Venturi structure; and

E. a controller responsive to said command signal to govern said servo motor to adjust the area of the variable area throat and thereby change said air velocity so as to bring about the desired ratio of air and fuel in said mixture.

4,250,857

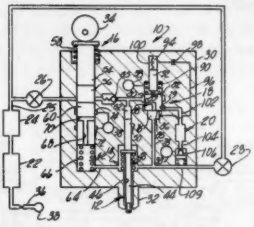
FUEL INJECTOR FOR PRODUCING SHAPED INJECTION PULSES

Lael B. Taplin, Bloomfield Hills, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Sep. 13, 1978, Ser. No. 942,020

Int. Cl.³ F02M *39/02*

U.S. Cl. 123—448 **44 Claims**



1. A fuel injector for an internal combustion engine comprising:

a pressure chamber for receiving fuel at a predetermined flow rate;

injection valve means communicating with said pressure chamber and having a valve means situated therein for opening said chamber in response to the pressure therein and for delivering an injection fuel pulse to a combustion chamber of said engine; and

negative pressure feedback regulator means for establishing the pressure within said pressure chamber at a substantially constant value prior to fuel injection and for maintaining the pressure therein at said value during injection and for regulating the opening velocity of said valve to be substantially linear.

4,250,858

INPUT-OUTPUT UNIT FOR MICROPROCESSOR CONTROLLED IGNITION OR INJECTION SYSTEMS IN INTERNAL COMBUSTION ENGINES

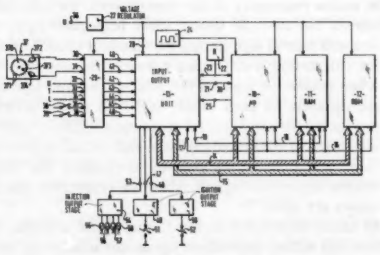
Edmund Jeenicke, Schwieberdingen; Winfried Klötzner, Maulbronn; Clemens Meichle, Vaihingen; Manfred Schenk, Fellbach, and Ingo Gorille, Oberriexingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 12, 1979, Ser. No. 56,960

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1978, 2834796; Nov. 22, 1978, 2850534

Int. Cl.³ F02D *5/00*; F02P *5/04*

U.S. Cl. 123—480 **12 Claims**



10. In a system for controlling cyclically recurring operations of an internal combustion engine having an air inlet pipe and a shaft, said system having a microprocessor, a permanent storage, a temporary storage, an address bus and a data bus connecting said microprocessor to said storages, means for

furnishing a speed signal indicative of the speed of said engine, and means for furnishing a sequence of air quantity signals having a frequency corresponding to the quantity of air in said air inlet pipe,

an input-output unit comprising

means (61, 101–103) for furnishing an angle signal signifying the angle of rotation of said shaft relative to a reference position;

means (74) connected to said angle signal furnishing means for counting said air quantity signals during predetermined ones of said angles of rotation and furnishing a first air number corresponding to the number of so-counted signals;

first buffer means (76) connected to said air quantity signal counting means for transferring said first air number to said data bus and said microprocessor, said microprocesor furnishing a modified air number in response to said first air number;

means (65, 67) for receiving said modified air number, counting from said modified air number to a predetermined number furnishing an output signal upon reaching said predetermined number and repeating said counting from said modified air number to said predetermined number in response to said output signal, whereby said receiving means creates a time interval extending for at least a first and second one of said counts;

and activator means (120) connected to said receiving means for maintaining at least one of said cyclically recurring operations during a time period corresponding to the so-created time interval.

4,250,859

ADJUSTING MECHANISM FOR THE ROTATIONAL SPEED-DEPENDENT CONTROL OF THE INJECTION INSTANT OF AN INJECTION PUMP OF INTERNAL COMBUSTION ENGINES

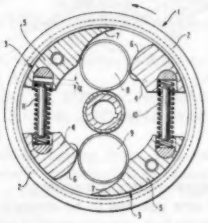
Heinz Scheying, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 13, 1978, Ser. No. 915,138

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1977, 2727121

Int. Cl.³ F02M *59/20*

U.S. Cl. 123—501 **5 Claims**



1. An adjusting mechanism for the rotational speed-dependent control of the injection instant of an injection pump of internal combustion engines, comprising a primary member operable to be driven by a crankshaft and a secondary member operable to be drivingly connected with the pump shaft, guide means for the primary part and guide means for the secondary part, flyweight means guided between respective guide means, and return spring means supported at the guide means of the primary part and at the guide means of the secondary part which with increasing rotational speed of the adjusting mechanism counteract the flyweight means, characterized in that within the lower rotational speed range of the adjusting mechanism a clearance is provided between an end of at least one return spring means and a guide means of the secondary part whereby a more rapidly responding adjustment is achieved within a lower rotational speed range of the adjusting mechanism.

4,250,860

INTERNAL COMBUSTION ENGINE WITH EXHAUST EMISSION CONTROL SYSTEM

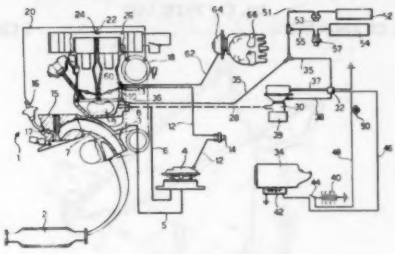
Francesco Cavallino, Pinerolo; Pasquale Martinez, Turin; Roberto Schiavuzzi, Turin, and Michele Allione, Turin, all of Italy, assignors to Fiat Auto S.p.A., Turin, Italy

Filed Feb. 22, 1979, Ser. No. 13,993

Claims priority, application Italy, Mar. 23, 1978, 67637 A/78

Int. Cl.³ F02M *23/10*

U.S. Cl. 123—587 **3 Claims**



1. A spark ignition internal combustion engine having an exhaust emission control system including means for admitting air into the engine exhaust system, said means being constituted by;

automatic unidirectional valve means communicating with the exhaust duct of said engine,

an air pump mechanically connected to said engine whereby to be driven thereby when said engine is operating,

air conduit means interconnecting said air pump and said automatic unidirectional valve means which latter is mounted on the cylinder head of the engine,

means defining internal passageway in said cylinder head, said internal passageway communicating at one end with said automatic unidirectional valve means and at the other end with said exhaust duct,

pressure relief valve means in said air conduit means operating to release excess air pressure generated by said air pump during operation of said engine, said engine heaving an engine starter motor and further including means for the admission of supplementary air into the induction manifold, said means comprising:

means defining a supplementary air inlet into said induction manifold of said engine,

a pneumatic "gulp" valve having an air inlet, an air outlet and first and second control pressure inlets,

means connecting said air outlet of said "gulp" valve to said supplementary air inlet into said induction manifold of the engine,

a three port, two position pneumatic solenoid valve having an electrical winding,

means connecting first and second ports of said three port solenoid valve to said first and second control pressure inlets of said pneumatic "gulp" valve,

means defining a hole in said induction manifold,

means connecting said hole in said induction manifold to the third of said three ports of said solenoid valve,

means connecting said electrical winding of said solenoid valve to the winding of said engine starter motor,

an electrical battery,

temperature sensitive switch means mounted on the cylinder head of said engine and connected in series between said solenoid valve and said electrical battery said temperature sensitive switch means being sensitive to the temperature of the engine coolant and closed when the engine coolant is below a predetermined threshold,

electrical conductor means connected in parallel with said temperature sensitive switch means between said winding of said solenoid valve and said engine starter motor, and selectively operable switch means closable to connect said electrical conductor means and said engine starter motor to said battery whereby said solenoid valve is energized when said selectively operable switch means is closed to energize said starter motor, and when said temperature sensitive switch means is closed.

4,250,861

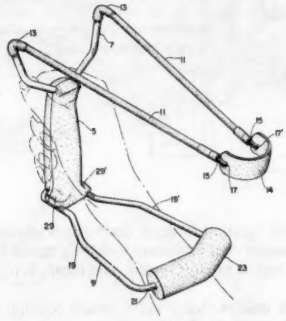
FOLDABLE WRIST BRACED SLINGSHOT

Howard Ellenburg, 2654 44th Ave., Columbus, Nebr. 68601

Filed Oct. 17, 1978, Ser. No. 952,085

Int. Cl.³ F41B *7/00*

U.S. Cl. 124—20 R **6 Claims**



1. A folding slingshot comprising a yolk having a hand grip, elastic members connected to said yolk, wrist brace means frictionally, detachably and pivotably mounted to the hand grip near the base thereof, said wrist brace comprising a pair of longitudinal members diverging rearwardly from the hand grip and spaced apart to receive the wrist between them and an end member integral with said longitudinal members engageable with the user's wrist, a groove on each side of said handle near the base thereof for receipt of end portions of said longitudinal members, a protruding stop member on said hand grip overhanging each of said grooves for preventing further rotation of said wrist brace, a cam area on said hand grip below each of said grooves containing two spaced apart cam surfaces, said end portions of the longitudinal members encountering said cam surfaces successively upon rotation toward said grooves, thereby spreading slightly said longitudinal members so that after passing over said cam surfaces, said end portions of the longitudinal members snap into said grooves and rest against said respective stop members to lock said wrist brace means in shooting position.

4,250,862

BALL PROJECTING DEVICE CAPABLE OF PROVIDING SPIN

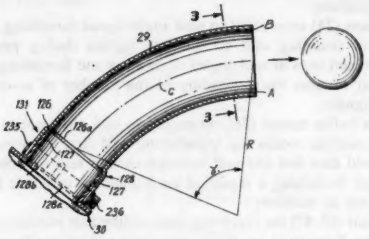
Richard Speer, Oak Hall, Ware Neck, Va. 23178

Continuation-in-part of Ser. No. 894,162, Apr. 5, 1978, Pat. No. 4,212,284, which is a continuation-in-part of Ser. No. 764,197, Jan. 31, 1977, Pat. No. 4,094,294. This application Jul. 31, 1978, Ser. No. 929,675

Int. Cl.² F41F *1/04*

U.S. Cl. 124—56 **15 Claims**

1. A device for projecting a ball, the device comprising a ball directing tube having an internal circumference for confining and directing a ball to be projected, said tube including a breech and a muzzle, at least the outermost portion of the tube extending out to the muzzle being curved along the longitudinal extent thereof, said tube defining a midline along said longitudinal extent which is curved along a substantial portion of the tube's length, said midline being generally coextensive along said portion with the arc of a circle; gas pressure supply means in fluid flow connection with the tube to provide gas under pressure thereto; a first end of the tube being pivotally connected to the pressure supply means, pivotable about an axis transverse to the longitudinal midline of the tube; means



for feeding a ball into the tube at the breech end thereof for movement along the tube in a direction from the first end of the tube toward the muzzle end of the tube; the ball feeding means being capable of feeding a ball slightly smaller than the internal diameter of the curved portion of the tube; whereby a ball projected from the tube has a rotational velocity imparted thereto.

4,250,863

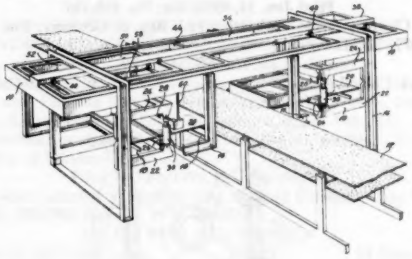
CEMENT BLOCK SPLITTER

Pierre Gagnon, 5637 Wilderton Ave., Montreal, Quebec, Canada (H3T 1S1), and Pierre Laforest, 1945 De Bruxelles St., Montreal, Quebec, Canada (H1L 5Z5)

Filed Nov. 26, 1979, Ser. No. 97,566

Int. Cl.³ B28D *1/32*

U.S. Cl. 125—23 C **4 Claims**



1. A cement block splitter comprising:

(a) a splitter frame adapted to be mounted perpendicularly over a conveyor belt carrying several consecutive rows of cement blocks;

(b) two tables mounted on said frame, one on each side of said conveyor belt at the same level as the conveyor belt;

(c) a pair of cutter supports mounted at each end of said splitter frame and each supporting a fixed lower cutter blade located at the level of each table and an upper cutter blade pivotally mounted on the splitter frame and located above said lower cutter blade;

(d) a first carriage frame mounted for reciprocating movement on said splitter frame and adapted to sequentially move the cement blocks of each row between one pair of cutter blades in one direction of movement and between the other pair of cutter blades in the opposite direction of movement of the first carriage frame; and

(e) a second carriage frame slidably mounted on said first carriage frame for moving said cement blocks off the

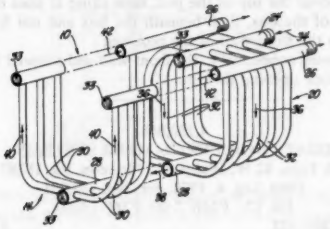
conveyor belt onto respective tables in both directions of movement of the first carriage frame.

4,250,864

STOVE HEAT EXCHANGER

Ernest R. Bergman, 551 E. Maple, Troy, Mich. 48084

Filed May 31, 1979, Ser. No. 44,795
Int. Cl.³ F24C *13/00*
U.S. Cl. 126—34 **3 Claims**



1. A heat exchanger that functions as a grate for an enclosed stove, the heat exchanger comprising: a front hearth section, a rear flue section, a central connector tube extending between the flue and hearth sections so as to carry a fluid to be heated, the hearth section including grate tubes extending from the connector tube to define an upwardly opening U-shape thereof with an open front end such that a stove associated therewith can be stoked through a front door opening thereof as well as through a top opening thereof, the grate tubes having lower ends communicated with the central connector tube and upper ends spaced from each other, a pair of outlet tubes communicated with the upper ends of the grate tubes to receive heated fluid from the hearth section, the rear flue section including an inlet tube for supplying fluid to be heated to the flue section, and the flue section also including tubing communicated with the inlet tube and the connector tube to carry the fluid for preheating thereof by flue gases prior to passage therefrom to the hearth section.

4,250,865

EASY ACCESS OVEN CONTROL PANEL AND PANEL SEAL

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Jan. 16, 1978, Ser. No. 869,751
Int. Cl.³ F24C *3/00*; A74B *88/00*
U.S. Cl. 126—41 D **1 Claim**

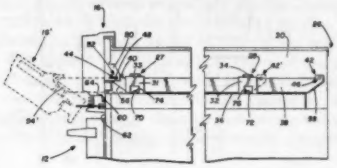
1. In an oven cabinet having front, rear and side walls in which a control panel is supported flush against the front wall thereof, apparatus to facilitate servicing of the backside of the control panel comprising:

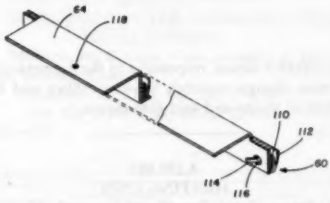
a pair of supporting brackets disposed on the inside surface of said cabinet on opposite side walls thereof in substantially parallel relation;

a pair of arms slidably mounted in said brackets and capable of being extended from the cabinet to any selected horizontal position, said arms having forward and rearward ends, a stop means extending from the rearward end for engaging said brackets to limit horizontal movement of said arms, the forward end being configured to define an abutment surface inclined to the vertical;

an oven control panel pivotally connected to each of said arms and being pivotable from a vertical operational position to an inclined service position when said control panel has been extended from said cabinet to a selected horizontal position, the backside of said control panel abutting with the inclined abutment surface on the forward ends of said arms when said arms are extended and when said panel is in service position for positioning said control panel at an angle from the vertical;

a flexible gasket disposed along the lower horizontal edge of said control panel adapted to be compressed by said control panel against the front surface of the cabinet to prevent cooking fumes and gases from the oven cavity from entering along the lower edge of the control panel; a gasket retaining flange having a top flange portion attached to the lower edge of the control panel;





said gasket including a resilient tube having an oval cross-section and being attached to said flange;

a resilient contact lip formed along the length of said tube extending upwardly from a lower edge thereof, said lip making contact with the front surface of the cabinet when said panel is disposed in its operational position to form an airtight seal between the seal and the cabinet.

4,250,866

THERMAL ENERGY STORAGE TO INCREASE FURNACE EFFICIENCY

Maria Telkes, Killeen, Tex., assignor to Research Institute for Advanced Technology, Killeen, Tex.

Filed Sep. 10, 1979, Ser. No. 73,914
Int. Cl.³ F24H *3/00*; F23M *9/00*; F23L *15/02*
U.S. Cl. 126—116 A **8 Claims**

1. A forced air heating system including:

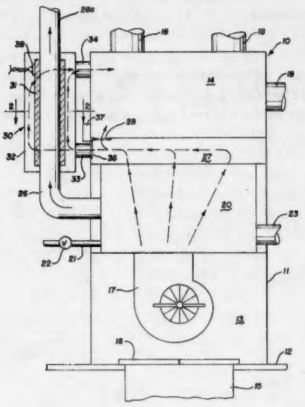
a furnace comprising a combustion chamber for burning a flowable fuel as a source of heat, means for controlling the flow of fuel to said combustion chamber, inlet duct means and discharge means for the circulated air flowing through said furnace, and a primary heat exchanger associated with said combustion chamber for heating the circulated air; a stack for discharging flue gases from said primary heat exchanger; and a blower for effecting the flow of circulated air through said furnace and the space to be heated; wherein the improvement comprises:

a recuperator exchanger comprising a body of a phase change material, disposed in heat exchange relation with the flue gases flowing through said stack, and flow path means for conveying the circulated air in heat exchange relation with said body; duct means connecting said recuperator exchanger between said inlet duct means and said discharge duct means;

bypass duct means connected between said inlet duct means and said discharge duct means, for bypassing said recuperator exchanger;

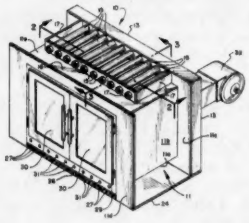
gate means for effecting the flow of circulated air alterna-

tively through said recuperator exchanger and said bypass duct means;



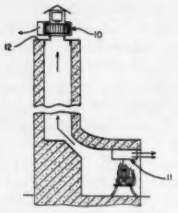
and actuator means, responsive to the temperature of said phase change material, for controlling said fuel flow control means and said gate means.

4,250,867
HEATING UNIT
John I. Andersen, Rte. 6, Box 66, and Eugene L. Clayton, 508 S. 3500 E., both of Idaho Falls, Id. 83401
Filed Oct. 3, 1977, Ser. No. 839,031
Int. Cl.³ F24B *7/04*
U.S. Cl. 126—121 **5 Claims**



1. A fireplace heater unit comprising
a box having a bottom, spaced upright side walls, a back wall interconnecting the side walls, a front wall interconnecting the side walls and having a door and air inlet openings therethrough, and a top interconnecting said side, back and front walls and having a chimney opening therethrough, whereby the interior of said box will serve as a combustion chamber;
a back outer wall forming a back chamber with the back wall of the box;
an air inlet duct connected from atmosphere into the back chamber;
means for forcing pressurized air through the air inlet duct and into the back chamber;
conduit means extending from the back chamber over the chimney opening through the top;
an outer top wall spaced from the top and forming a front chamber with the top, said conduit means extending into said front chamber;
means sealing said front chamber from the chimney opening;
at least one outer side wall forming a side chamber with a side wall of the box, said side chamber being connected to the front chamber and separated from the back chamber;
an outer bottom wall forming a bottom air chamber with the bottom and the front wall of the box, said bottom air chamber being open to each said side chamber and separated from the back chamber, and having openings from the bottom chamber through the front wall whereby heated air in the bottom chamber is forced through said openings;
said means, for forcing pressurized air including a blower for directing atmospheric air against the back wall of the box, then over the top of the box, then along at least one side wall of the box, then beneath the box and out from beneath the front wall of the box; and
door means connected to the front wall and adapted to close the door opening therein.

4,250,868
DRAFT INDUCER/DAMPER SYSTEMS
Filmore O. Frye, 42 W. Blaine St., McAdoo, Pa. 18237
Filed Aug. 4, 1978, Ser. No. 930,931
Int. Cl.³ F24B *7/00*; F24F *13/00*
U.S. Cl. 126—121 **3 Claims**

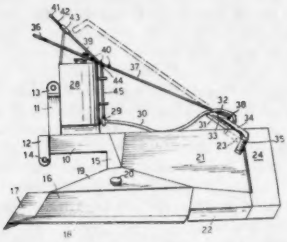


1. A residential heating system comprising:
a fireplace,
a flue having an inlet end connected to the fireplace to receive the products of combustion produced in said fireplace and an exhaust end remote from the inlet end for discharging the products of combustion,
a hot air heat exchanger associated with, and heated by, the fireplace,
a first electrically operated blower means located in the exhaust end of the flue to create and maintain a forced draft through said fireplace,
a second electrically operated blower means for creating and maintaining forced air through said heat exchanger; and,
an electrical control circuit, including (a) a manually actuated switch for activating said first blower means, (b) a temperature responsive switch electrically connected to a first temperature sensing device located in said heat exchanger for deactivating said first blower means when the temperature in the heat exchanger drops below a first pre-determined temperature; and, (c) a second temperature responsive switch electrically connected to a second temperature sensing device located in the heat exchanger for activating and deactivating said second blower means in accordance with pre-determined temperatures in the heat exchanger.

4,250,869
FIRE PLOW
Kenneth R. Doyle, Flynn St., Hughenden, Queensland 4821, Australia
Filed Feb. 22, 1979, Ser. No. 14,180
Int. Cl.³ F23C *5/00*
U.S. Cl. 126—271.2 R **5 Claims**

1. A fire plow of the type including a frame, means for mounting the frame behind a tractor, and a plow share

mounted below the frame and capable of forming a plow track or break for clearing grass and the like to both sides of the plow share, said plow share having two sides rearwardly divergent from a front point and a pair of wing members mounted above and extending behind said plow share, said wing members being rearwardly divergent and inclined



toward the top, a burner arm pivotally connected at one end to the frame and carrying a burner at the other end thereof, said burner arm being pivotally movable to bring the burner near to the ground at either side of the plow track or to an intermediate raised position clear of the ground, and fuel supply means mounted on the frame for supplying fuel to the burner.

4,250,870

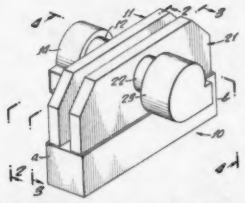
APPARATUS AND METHOD FOR REMOVING FUMES FROM THE SPACE ABOVE A COOKING APPLIANCE IN A RESTAURANT

Irvin R. Kuechler, 172 E. 27th St., San Bernardino, Calif. 92404

Continuation of Ser. No. 842,620, Oct. 17, 1977, abandoned, which is a continuation of Ser. No. 646,145, Jan. 2, 1976, abandoned, which is a continuation-in-part of Ser. No. 509,555, Sep. 26, 1974, Pat. No. 3,952,640. This application Feb. 2, 1979, Ser. No. 8,926

Int. Cl.³ F23J *11/00*

U.S. Cl. 126—299 D **9 Claims**



1. Smoke-hood apparatus for exhausting fumes from a space above a cooking appliance in a room in a restaurant, which apparatus incorporates economical, compact and effective supply and exhaust blower means, said smoke-hood apparatus comprising:

(a) a smoke-hood having grease filter means therein,
said grease filter means being adapted to be mounted above a cooking appliance in a room in a restaurant, and adapted to remove grease from the air and fumes passed through said filter means,

(b) means to effect flow of air across a space above said cooking appliance and toward said filter means,
said air containing fumes from said cooking appliance,

(c) exhaust and supply blower means to exhaust air and fumes to the exterior of said room, and to effect forced supply of at least air to said hood without depleting said room of major amounts of air,

(d) means to conduct air and fumes from said filter means to at least part of said exhaust blower means,
said last-named means comprising means to define an exhaust plenum chamber located on the opposite side of said filter means from said cooking appliance,
one major wall portion of said exhaust plenum chamber being formed by said grease filter means,
said last-named means further comprising means to define extended exhaust plenum chamber means which greatly extends said exhaust plenum chamber, and

(e) means to effect conduction of air from said supply blower means to said hood,
said last-named means comprising means to define a supply plenum chamber and further comprising means which greatly extends said supply plenum chamber in a direction away from the smokehood apparatus,

characterized in that said supply blower means includes at least one impeller disposed in said extended supply plenum chamber at a location spaced from said hood,
said impeller being substantially unenclosed in said extended supply plenum chamber and having a size much smaller than that of said extended supply plenum chamber.

4,250,871

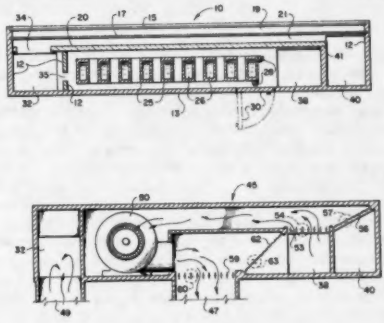
UNITARY STRUCTURE AND METHOD FOR UTILIZING SOLAR ENERGY

William W. Milburn, Jr., Boulder, Colo., assignor to Thomas W. O'Rourke, Boulder, Colo.

Filed Dec. 18, 1978, Ser. No. 970,287

Int. Cl.³ F24J *3/02*; G05D *23/00*

U.S. Cl. 126—430 **9 Claims**



8. A composite structure for collecting and storing solar energy, the structure comprising:

a plurality of enclosed modules adapted to be supported at an exterior surface of a building with each having glazing transparent to radiant energy forming at least a portion of one side thereof;

at least one inlet opening and at least one outlet opening defined in each module and positioned to interface with a corresponding opening defined in an adjacent module;

a plurality of collectors having radiant energy absorbing surfaces and being positioned at least one each within a module adjacent to but spaced from the glazing of such enclosure with the radiant energy absorbing surface disposed towards the glazing;

a plurality of absorber channels defined at least one each within each module adjacent the side of the collector of such module opposite that side thereof disposed towards the glazing;

a plurality of heat reservoir channels disposed one each within each module at a position spaced from the collectors and absorber channels;

a plurality of heat reservoirs in the form of hollow enclosures positioned at least one each within each reservoir channel and having a sealable opening defined therein;

flowable heat storage media disposed within each heat reservoir;

at least one outlet vent from the structure;

ducting means connecting the absorber channels, heat reservoir channels, inlet and outlet openings of each module, and the outlet vent; and

damper means adapted to control flow from the absorber channels to the heat reservoir channels, or alternatively from the heat reservoir channels to the outlet vent in response to selective positioning of the damper means.

4,250,872

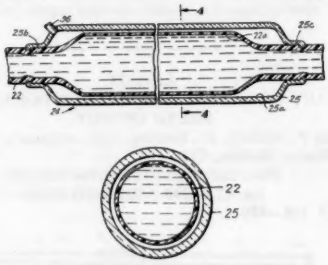
BLOOD PULSATING AND/OR PUMPING DEVICE

Yehuda Tamari, 515 Queen St., Westbury, N.Y. 11590

Continuation-in-part of Ser. No. 761,169, Jan. 21, 1977, abandoned. This application May 25, 1978, Ser. No. 909,567

Int. Cl.³ A61B *1/03*

U.S. Cl. 128—1 D **19 Claims**



1. A blood pulsating and/or pumping device for use in procedures involving transporting blood between two cannulae inserted in the body comprising a one-piece continuous length of blood compatible flexible polymeric tubing having a smooth inner surface which minimizes blood trauma throughout and including a normal first inside diameter, and a region intermediate the ends of said tubing formed by permanent expansion to have an expanded second inside diameter greater than said normal first inside diameter of the remainder of said tubing and a thinner wall than that of the remainder of said tubing with a gradual transition in wall thickness and diameter therebetween, a walled enclosure more rigid than said tubing region surrounding said region of said tubing with a clearance therebetween except at the ends of said enclosure which encircle said tubing beyond said region with a snug fit, and duct means joined to said enclosure for interconnecting the space between said enclosure and said tubing region with a driving unit for controlling the supply thereto and withdrawal therefrom of pressurizing fluid.

4,250,873

ENDOSCOPES

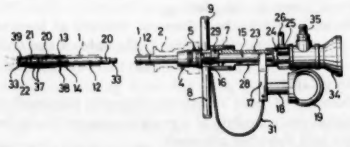
Ludwig Bonnet, Knittlingen, Fed. Rep. of Germany, assignor to Richard Wolf GmbH, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 897,060

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1977, 7713059[U]

Int. Cl.³ A61B *1/00*

U.S. Cl. 128—7 **3 Claims**



1. An endoscope for inserting an implant liner into an opening through a stricture in the urethra, said endoscope comprising a telescope for viewing internal anatomy and further comprising the following:

(a) an outer barrel having a telescope eyepiece at the proximal end thereof which is remote from the opposite or distal end, a tensioning tube having both proximal and distal ends and being displaceable axially in the distal direction within said outer barrel and against a resilient means, said resilient means being suspended from said outer barrel, and external annular ridge and longitudinal slots at the distal end of said tensioning tube and the sections of said tube situated between said slots being arranged to spring radially inwards,

(b) a holding tube having a proximal end and a distal end, and said holding tube having a proximal portion and a distal portion, and which extends through said tensioning tube to receive the telescope, and said holding tube being fixed in relation to said outer barrel, said distal portion of said holding tube being of reduced diameter, and there being an annular ridge adjacent the distal end of said holding tube, and

(c) an implant liner which comprises a distal bushing and a proximal bushing between which are resilient bridges formed by strips which are sprung to arch outwards, the inside diameter of said distal bushing being smaller than the external diameter of said annular ridge on said distal portion of reduced diameter of the said holding tube, and the inside diameter of said proximal bushing being such that said proximal bushing can be inserted over said annular ridge of said tensioning tube, and the outside diameter of said proximal bushing being such that the proximal bushing is carried in the barrel by being fitted into the distal end thereof.

4,250,874

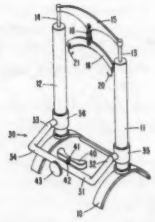
THERAPEUTIC NECK TRACTIONING DEVICE

Kennon G. Rude, 340 Seminole Dr., Boulder, Colo. 80303

Filed Jun. 28, 1978, Ser. No. 919,900

Int. Cl.³ A61H *1/02;* **A61F** *5/01*

U.S. Cl. 128—75 **12 Claims**



1. In apparatus for allowing controlled therapeutic exercising including a neck tractioning device having a shoulder mount, an assembly pivotally securable to a wearer's head and a support framework interconnecting the shoulder mount and head securing assembly having extendable means for selectably separating the shoulder mount and head assembly the improvement comprising:

means having a face for engaging the rear neck surface of the wearer with said face having a first dimension in a direction parallel to the line of vertebrae and a second dimension generally configured to conform to the rear surface of the neck transverse to the line of vertebrae, the length of said face along said first dimension being less than its length along said second dimension, and

attaching means rigidly attaching said neck engaging means to said framework for establishing said engaging means face first dimension in a head-to-head shoulders fulcrum relative to said neck vertebrae for the wearer whereby therapeutic pivotal exercises are performable around said

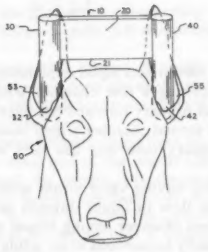
fulcrum by the wearer while the neck tractioning device is applying tensile force to the neck of the wearer, said attaching means including a pair of collars slideably mounted on said framework such that said collars are adjustable in a direction substantially parallel to the direction of separation between the shoulder mount and head assembly and securing means associated with said collars for releasably securing said collars in fixed relation to said framework and a rigid U-shaped bar having its opposite ends each secured to a respective one of said collars and adapted for surrounding the rear of the neck in spaced apart relation thereto, said neck engaging means being mounted on said bar such that when said apparatus is worn said neck engaging means is positioned between said bar and the rear surface of the neck.

4,250,875

CANINE EAR STRENGTHENING AND TRAINING DEVICE

Thomas E. Marsh, and Pamela S. Marsh, both of R.R. 1, Box 251, Parker City, Ind. 47368

Filed Feb. 2, 1979, Ser. No. 9,230
Int. Cl.[3] A61F *13/00*; A01K *29/00*
U.S. Cl. 128—82 **1 Claim**



1. A canine ear strengthening and training device to be secured upon the head of a dog which comprises:

two columnar shafts each having an upper and a lower end, the lower end of said shafts being shaped for insertion into the ear canals of a dog, said shafts having the form of right circular cylinders, and said lower ends of said shafts being hemispherical in shape so as to prevent injury to the inner ear; and

a transverse member affixed to the upper ends of said shafts, and extending between them perpendicular to their axes, of a length corresponding to the distance between the ears of the dog upon which the device will be used, so that said columnar shafts, when inserted into the dog's ear canal, are spaced symmetrically apart.

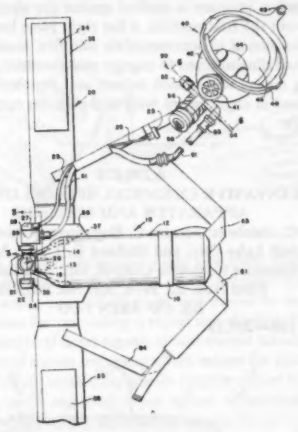
4,250,876

EMERGENCY LIFE SUPPORT SYSTEM

Max L. Kranz, Brea, Calif., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Aug. 10, 1978, Ser. No. 932,535
Int. Cl.[3] A62B *9/02*
U.S. Cl. 128—202.22 **4 Claims**

1. In an emergency breathing device comprising a body harness supporting a pressured reservoir of breathable gas and a face mask with a gas supply regulator attached thereto and communicating with said reservoir by flexible hose means, and including reservoir shut off valve means having a valve body and valve member control knob carried on said reservoir and a first stage pressure reduction valve connected directly to said valve body of said shut off valve means and discharging to said flexible hose means, the improvement comprising a fluid pressure responsive audible generator and a fluid passage to apply fluid from downstream of said first stage pressure reduction valve to said audible generator, audible generator valve means in said fluid passage, resilient means biasing said audible generator valve means in a normally open position in said fluid passage and high pressure fluid passage means to apply the fluid pressure of said reservoir to close said audible generator valve means when said fluid in said reservoir is above a predetermined pressure; and wherein said gas supply regulator includes demand and pressure demand modes of operation and switch means to select one of said modes of operation; and wherein said gas supply regulator further includes a main valve



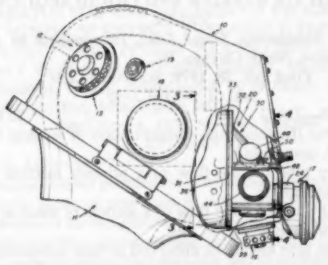
recess having a central main valve seat with flexible valve member supported therein and biased against said main valve seat, means to apply inlet gas pressure to both sides of said flexible valve member, pilot valve means and gas pressure vent means communicating from said pilot valve means to said main valve recess on the side of said valve member opposite said main valve seat whereby opening and closing of said pilot valve means moves said flexible valve member away from and toward, respectively, said main valve seat.

4,250,877

DIVER'S HELMET AND FACE MASK FOR USE THEREWITH

Jack H. Owens, North Reading, and John E. Slavin, Acton, both of Mass., assignors to Morse Diving Equipment Company, Inc., Rockland, Mass.

Filed May 15, 1978, Ser. No. 906,084
Int. Cl.[3] A42B *3/00*; A62B *18/04*
U.S. Cl. 128—207.11 **17 Claims**



1. In combination, a helmet provided with means to hold the head of a user in a predetermined position, a face mask consisting of first and second integral portions, the first portion hav-

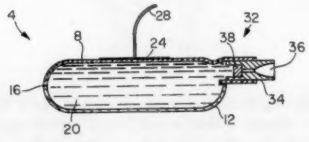
ing a cavity dimensioned to accommodate the nose of a user and to overlie his mouth, and the second portion an exposed, planar, marginal shoulder continuously surrounding the open end of the cavity, and a body shaped and dimensioned to conform generally to facial features marginally of the nose and mouth without interfering with a user's vision and provided with a planar outer surface to which said second portion is sealed, said face mask of pliant material and the body of a material sufficiently compressible to comply to the particular facial features of the user to become continuously sealed thereto when pressure is applied against the shoulder continuously about the first portion, a flat rigid plate having an aperture dimensioned to accommodate said first mask portion and shaped and dimensioned to engage said shoulder, and pressure applying means within said helmet and attached to the front thereof and in engagement with said plate on opposite sides of the cavity.

4,250,878

NON-INVASIVE CHEMICAL SPECIES DELIVERY APPARATUS AND METHOD

Stephen C. Jacobsen; Jerome C. Stenehjem; Robert L. Stephen, all of Salt Lake City, and Richard D. Luntz, Murray, all of Utah, assignors to Motion Control, Inc., Salt Lake City, Utah

Filed Nov. 22, 1978, Ser. No. 963,029
Int. Cl.³ A61N *1/30*
U.S. Cl. 128—207.21 **14 Claims**



1. A bioelectrode for use in the iontophoretic delivery of a chemical species into the skin or tissue of a person comprising

a pouch for holding a fluid containing the chemical species, said pouch including flexible and deformable walls adapted to generally conform to surface shapes against which they are placed, at least a portion of which includes a microporous membrane separating the interior of the pouch from the exterior and having openings of about 0.22 microns or less in diameter, said portion being formed to present a generally planar to convex exterior surface, and

an electrode carried by said pouch for coupling to an electric potential source.

4,250,879

EQUIPMENT SETS AND SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS AT DUAL FLOW RATES EMPLOYING A COMBINED AIR BARRIER AND LIQUID SEQUENCING VALVE

Andrew J. Muetterties, Gages Lake, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Feb. 28, 1979, Ser. No. 16,230
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 G **20 Claims**

1. A set for the sequential administration of medical liquids to a patient, comprising:

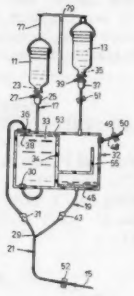
a primary tube for the flow of a primary medical liquid therethrough,

a secondary tube for the flow of a secondary medical liquid therethrough;

a common tube having its distal end in fluid communication with the proximal ends of said primary and secondary tubes and its proximal end open for the flow of liquid therefrom to form a primary liquid flow path comprising said primary tube and said common tube and a secondary liquid flow path comprising said secondary tube and said common tube,

a secondary flow control means in said secondary liquid flow path for adjusting the flow rate of said secondary liquid therethrough,

a primary flow control means on said primary tube for adjusting the flow rate of said primary liquid through said primary flow path to a rate independent of the flow rate of said secondary liquid through said secondary liquid flow path, and



a combined air barrier and liquid sequencing valve having a housing comprising a first chamber which constitutes a portion of said primary tube and has inlet and outlet ports thereto and a second chamber which constitutes a portion of said secondary tube and has inlet and outlet ports thereto,

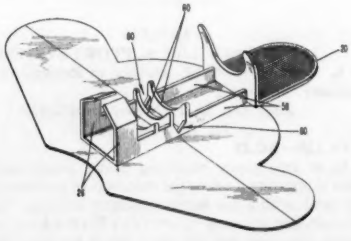
said first chamber having valve means associated therewith to control the flow of liquid through said primary tube and said second chamber having means associated therewith substantially impervious to air while said set is in use to prevent the flow of air through said secondary flow path.

4,250,880

STABILIZING FITTING FOR AN INTRAVENOUS CATHETER

Marvin Gordon, East Windsor, N.J., assignor to Whitman Medical Corporation, Clark, N.J.

Continuation-in-part of Ser. No. 5,032, Jan. 19, 1979, which is a continuation-in-part of Ser. No. 905,399, May 12, 1978, abandoned. This application Jun. 8, 1979, Ser. No. 46,803
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—214 R **10 Claims**



1. A stabilizing fitting for securing an intravenous catheter to a patient's skin comprising a laminar base member having a longitudinal axis, an upper surface and a lower surface, pressure-sensitive adhesive means on at least a part of said lower surface of said base member, a catheter hub-retaining cradle on said upper surface of said base member, said cradle having a

forward end, a rearward end and resilient side walls substantially parallel to and symmetrically disposed on opposite sides of said longitudinal axis, said side walls being formed to receive and laterally locate a catheter hub pressed into said cradle, locating means associated with said cradle for maintaining said hub in position longitudinally of said axis with the catheter projecting substantially axially from said forward end of said cradle, a tab grip froming an extension of said base member rearwardly of said cradle, and means for reducing the bending resistance of the fitting along a bending axis substantially perpendicular to said longitudinal axis and located intermediate the forward and rearward ends of said cradle.

4,250,881

CATHETER INSERTION DEVICE

Gordon E. Smith, Sun Prairie, Wis., assignor to Quest Medical, Inc., Carrollton, Tex.

Filed Aug. 29, 1979, Ser. No. 70,717
Int. Cl.³ A61M *5/32*
U.S. Cl. 128—214.4 **7 Claims**

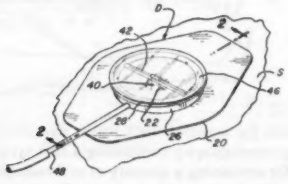
1. A catheter insertion device comprising:
an elongated hollow needle (14) sharpened at its distal end (22);
a flexible catheter (12) formed of a silicon elastomer and positioned stretched over the needle (14);
a hub member (18) slidably received over the proximal end of the needle (14); and
a semi-rigid sleeve (26) extending from the hub member (18) toward the distal end of the needle (14) and slidably received around the needle (14), the proximal end of the catheter (12) being stretched over the sleeve (26), the sleeve (26) serving to force the catheter (12) off of the needle (14) as the needle (14) is withdrawn through the hub member (18).

4,250,882

WOUND DRAINAGE DEVICE

Edwin L. Adair, Littleton, Colo., assignor to Medical Dynamics, Inc., Englewood, Colo.

Filed Jan. 26, 1979, Ser. No. 6,784
Int. Cl.³ A61F *5/44, 13/00*
U.S. Cl. 128—275 **24 Claims**



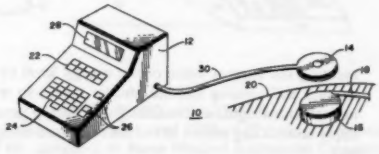
1. A drainage device for attachment to the skin of a patient while overlying an opening in the skin tissue and adapted for use with a drainage strip which is insertable into the opening to permit drainage thereof, said device comprising:
a flange including a first side for sealingly engaging the skin and a second side opposite first side, said flange having an inlet therethrough for overlying the opening in the skin tissue to permit entry of drainage material from the skin opening;
collar means connected to said second side of said flange and having an opening to discharge the drainage material containable within said collar means; and
a locking member connected to said collar means, said locking member including a pair of resilient wings connected together at their first ends and spreadable from each other at their second ends.

4,250,883

DIGITAL CARDIAC PACEMAKER WITH REFRACTORY, REVERSION AND SENSE RESET MEANS

David L. Thompson, Fridley, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 6, 1978, Ser. No. 957,962
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PG **38 Claims**



1. A digital cardiac pacemaker pulse generator comprising:
a pair of output terminals, at least one of which is adapted to be electrically coupled through lead means to the heart;
sensing means for providing a signal manifesting the detection of electrical heart signals at said output terminals; and
digital control means including clock means for providing a series of clock signals, resettable counter means for counting said clock signals, output means responsive to said counter means reaching a certain count for providing an output signal to said terminals and reset means for resetting said counter means to an initial count, said reset means further comprising:
means coupled to said counter means for providing a first predetermined refractory count and a certain blank count of said counter means;
resettable fixed time measuring means which provides a signal a fixed time after being reset, said fixed time means being reset as a result of the provision of an output signal by said control means and further being reset by the occurrence of a sensing means signal after said certain blank time following said counter means being reset for resetting said counter means in response to said sensing means signal if said sensing means signal occurs after said first predetermined refractory count of said counter is reached and further if said sensing means signal occurs after the expiration of said fixed time measured from the last occurring one of an output signal or a signal provided by said sensing means after said certain blank count following the previous resetting of said counter means is reached.

4,250,884

APPARATUS FOR AND METHOD OF PROGRAMMING THE MINIMUM ENERGY THRESHOLD FOR PACING PULSES TO BE APPLIED TO A PATIENT'S HEART

Jerome T. Hartlaub, New Brighton; Bobby L. Smith, Cedar, and Richard M. Powell, Minneapolis, all of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

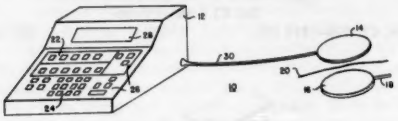
Filed Nov. 6, 1978, Ser. No. 958,066
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—419 PT **11 Claims**

1. Apparatus for programming a pacing generator to effect a threshold mode of operation in which the minimum energy level required for the generated stimulating pulses to stimulate the patient's heart is determined, said apparatus comprising:
(a) keyboard means for operating said programming apparatus in its threshold mode of operation;
(b) conductor means coupling said programming apparatus to the patient for receiving and detecting the patient's

heart activity signals including the stimulating pulses applied to the patient's heart by said pacing generator;

(c) transmitter means for transmitting encoded signals from said apparatus indicative of the desired energy level of the stimulating pulses to be applied by said pacing generator to the patient's heart;

(d) computing means responsive to the initiation of operation in the threshold mode by said keyboard means for decre-



menting the current value of the energy level by a given amount and causing said transmitter means to transmit a new encoded signal commanding said pacing generator to apply stimulating pulses of the decremented energy level; and

(e) display means connected to said computing means for displaying the current, decremented values of the energy level.

4,250,885

METHOD AND APPARATUS FOR UTILIZING SOLAR HEAT FOR HEATING A BUILDING

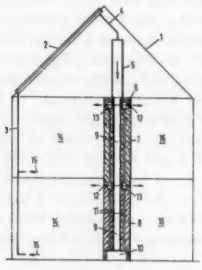
Joannes M. van Heel, Rotterdam, Netherlands, assignor to Stichting Bouwcentrum, Netherlands

Filed Mar. 3, 1978, Ser. No. 883,060

Claims priority, application Netherlands, Mar. 4, 1977, 7702356

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—430 **13 Claims**



1. In an apparatus for utilizing solar heat for heating a building, comprising a solar collector and a heat-storage unit, means for transporting heated air from said collector to said heat-storage unit, and means for transporting and distributing air heated in the collector to rooms in said building to be heated, the improvement wherein said heat-storage unit is disposed separately from said collector and integrally within said building such that the heat storage unit adjoins the rooms to be heated, said heat-storage unit comprising passage means in communication with said collector for passing said heated air through said storage unit for storage of heat therein; and conduits being essentially formed in said heat-storage unit and communicating with said passage means, so that said conduits communicate with said collector by way of said passage means, said conduits terminating in said rooms for distribution of said heated air thereto.

4,250,886

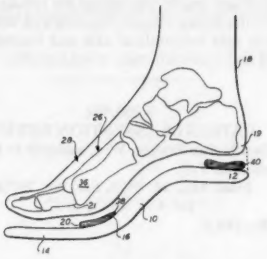
ORTHOTIC

Rhea R. Riso, 240 Garth Rd., Apt. 2A2, and Richard E. Memoli, 22 Carstensen Rd., both of Scarsdale, N.Y. 10583

Filed Jun. 26, 1979, Ser. No. 52,437

Int. Cl.³ A61F *5/14*

U.S. Cl. 128—621 **34 Claims**



1. An orthotic construction of the type intended to be incorporated in a shoe so as to receive thereon a human foot, said orthotic comprising:

(a) a sole including heel and forefoot receiving portions;

(b) means for elevating said heel receiving portion approximately one and one-half inches above said forefoot receiving portion; and

(c) a metatarsal pad secured to said sole and so dimensioned as to have one marginal edge substantially adjacent and proximal to the head of the second metatarsal, a second marginal edge substantially adjacent and lateral to the first metatarsal, and a third marginal edge substantially adjacent and medial to the fifth metatarsal of the foot.

4,250,887

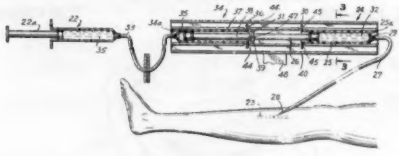
REMOTE MANUAL INJECTING APPARATUS

Herbert Dardik; Michael Smith; Ibrahim M. Ibrahim, and Irving I. Dardik, all of Tenafly, N.J., assignors to Dardik Surgical Associates, P.A., Fort Lee, N.J.

Filed Apr. 18, 1979, Ser. No. 31,173

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—655 **7 Claims**



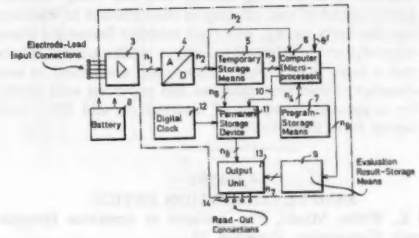
1. Apparatus for injecting radiopaque dye into a patient's artery during arteriography comprising a first syringe including a barrel for containing a quantity of said radiopaque dye, a first plunger for driving said dye out of said barrel, and a needle for introducing said dye from said barrel into the patient's artery, a conduit having opposite ends, second and third syringes having second and third barrels respectively, each with a discharge opening connected to one end of said conduit, a drive plunger in said second barrel and a driven plunger in said third barrel, said second and third syrings and intermediate conduit adapted to be filled with a generally imcompressible hydraulic fluid, whereby axial movement of the drive plunger will cause similar movement of the driven plunger, and coupling means for holding said first barrel and connecting said driven and first plungers, whereby axial movement of said driven plunger will drive said first plunger axially relative to said first barrel and discharge said dye out of said needle.

4,250,888

HEARTBEAT MONITORING PROCESS AND DEVICE

Rudolf Grosskopf, Koenigsbronn, Fed. Rep. of Germany, assignor to Carl Zeiss-Stiftung, Oberkochen, Fed. Rep. of Germany

Filed Nov. 28, 1978, Ser. No. 964,364
Claims priority, application Fed. Rep. of Germany, Dec. 14, 1977, 2755643
Int. Cl.³ A61B 5/04
U.S. Cl. 128—702 **13 Claims**



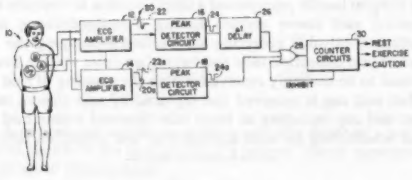
1. The method of electronic long-time monitoring of heart performance involving EKG lead electrodes applied to the skin of a patient, which method comprises digitizing the EKG signal delivered by the electrodes, and simultaneously evaluating the EKG signal on the basis of each of a plurality of different parameters, temporarily storing all evaluation signals for a plurality of heartbeats in the form of histograms, each of which histograms is unique to a different parameter evaluation, whereby for each histogram a threshold value is stored representing a normal performance of the heart in terms of the applicable parameter, continuously comparatively monitoring each newly developed evaluation signal against the applicable threshold value for the occurrence of an anomaly histogram in respect of the applicable parameter, and permanently storing the anomaly histogram as well as the corresponding-parameter histograms for a predetermined number of preceding and following heartbeat cycles.

4,250,889

HEARTBEAT OCCURRENCE DETECTOR

Kenneth M. Levin, 14 Anchorage Ct., San Rafael, Calif. 94903

Filed Mar. 2, 1979, Ser. No. 17,020
Int. Cl.³ A61B 5/04
U.S. Cl. 128—708 **5 Claims**



1. Apparatus for detecting a heartbeat occurrence in an electrocardiographic waveform containing artifact information, the heartbeat occurrence being represented by at least first and second pulses, the first and the second pulses respectively having amplitudes of at least a first and a second absolute value, and for providing an output signal indicative of said occurrence, the apparatus comprising:

means responsive to said waveform for detecting the first and the second values and for providing first and second signals indicative of said first and second pulses;

means coupled to said detecting means for delaying said first signal a predetermined amount of time;

means coupled to said detecting means and said delaying means and responsive to coincidence between said second signal and said delayed first signal to generate said output signal; and

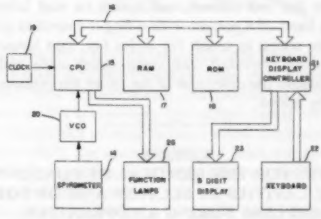
means coupled to said coincidence means and responsive to said output signal for inhibiting coincidence between said second signal and said delayed first signal for a second predetermined time period, the second predetermined time period corresponding to a predetermined maximum heartbeat rate.

4,250,890

PULMONARY ANALYZER

William C. Jones, Oak Brook, and Clifford Harwood, Wheaton, both of Ill., assignors to Jones Medical Instrument Company, Oak Brook, Ill.

Filed Feb. 23, 1979, Ser. No. 14,423
Int. Cl.³ A61B 5/08
U.S. Cl. 128—728 **6 Claims**

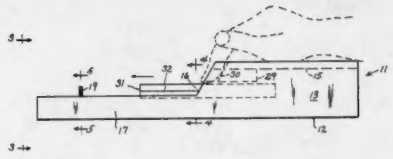


1. A self-contained, portable system for measuring and computing respiratory parameters of a test subject undergoing forced expired breathing maneuvers according to instructions, comprising: transducer means including spirometer means receiving the exhaled breath of the subject for generating a measurement signal representative of the volume of gas exhaled by said subject during a predetermined forced breathing maneuver; miniaturized digital computer means including clock circuit means for generating timing signals, said computer means receiving said measurement signal for acquiring and storing digital signals representing a stored record of said forced maneuver, in timed relation with said timing signals and for computing predetermined respiratory parameters of said subject from said stored signals; keyboard means comprising a plurality of digit key means selectively actuatable by an operator and communicating with said computer means for entering data relating to said particular subject, and a plurality of function key means for controlling the acquisition of a record of a forced breathing maneuver from said spirometer means in timed relation with said timing signals and for communicating with said computer means for controlling the sequence of operation and computation of said system; and visual display means for presenting alphanumeric characters under control of said computer means to generate indicia representative of the computed parameter results selected by the operator through said keyboard means, said computer means further including a central processing unit and a voltage controlled oscillator interconnected between said central processing unit and said transducer means, said voltage controlled oscillator receiving said measurement signal from said transducer means and converting the same to digital signals for averaging by said central processing unit to substantially eliminate random noise.

4,250,891
DEPTH-SENSE PERCEPTION AND TWO-POINT DISCRIMINATION AESTHESIOMETERS

Walter S. Carlson, Cincinnati, Ohio; Shlomo Samueloff, Jerusalem, Israel, and Donald E. Wasserman, Cincinnati, Ohio, assignors to The United States of America as represented by the Department of Health, Education & Welfare, Washington, D.C.

Filed Jun. 7, 1979, Ser. No. 46,431
Int. Cl.³ A61B 5/16
U.S. Cl. 128—744 **18 Claims**

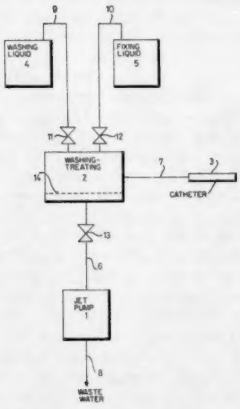


1. A fingertip sensitivity measuring device comprising a housing having a recess therein, a feeler bar horizontally slidable within said housing and being extensible from the mouth of the recess, said feeler bar having a top surface with a profile which changes progressively along its length starting at a point spaced from the end thereof, and means on said housing to support the hand of a patient with a finger extended over the mouth of the recess to touch the feeler bar, said housing and feeler bar being provided with cooperating scale and index means to measure the extension of the feeler bar relative to the mouth of the recess.

4,250,892
APPARATUS FOR THE REMOVAL OF CONTENTS OF BODY CAVITIES BY SUCTION AND/OR FOR SAMPLING DURING AN OPERATION

Balazs Dolhay, and Zsolt Barczy, both of Budapest, Hungary, assignors to Chinoin Gyogyszer es Vegyeszett Termekek Gyara, Budapest, Hungary

Filed Oct. 23, 1978, Ser. No. 953,614
Claims priority, application Hungary, Oct. 24, 1977, DO 416
Int. Cl.³ A61B 17/22
U.S. Cl. 128—758 **9 Claims**



1. An apparatus for the evacuation of the contents of a body cavity which comprises:

a flexible catheter having at least one end insertable into a body cavity and formed with an opening;

a container provided with a filter subdividing the interior of the container into a first chamber communicating with another end of said catheter and a second chamber;

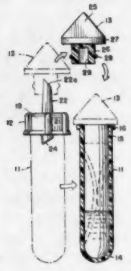
a suction source connected to said second chamber for evacuating said container and drawing material from said body cavity through said catheter into said first chamber and at least in part onto said filter; and

two sources of liquid connected to said container at said first chamber, said catheter being flexible substantially over its entire length and being formed at said end with a metallic rigid member provided with a lateral opening for communication with the body cavity, said end being rounded axially ahead of said opening in the direction of insertion into the body cavity, said rigid member forming a sharp edge adjacent said lateral opening, a washing-agent source and a fixing-agent source being each connected to said chamber at said first chamber and provided with means for sequential treatment of material on said filter with liquids from these sources.

4,250,893
SAMPLE COLLECTION DEVICE

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Feb. 21, 1979, Ser. No. 13,244
Int. Cl.³ A61B 5/14
U.S. Cl. 128—765 **11 Claims**



1. A device for use in collecting fluid samples for laboratory use, comprising a flexible plastic vial having a pliable tubular body capable of being deformed by finger pressure and of recovering its original configuration upon removal of such force; said body having an opening at one end thereof; a ventless cap sealingly but removably secured to said body at said opening; said cap having a narrow elongated collection tube projecting outwardly therefrom; and a closure member having an integral handle portion and a sleeve portion at opposite ends thereof; said sleeve portion having a recess-defining inner surface removably receiving and sealingly engaging the free end of said collection tube and having an outer surface dimensioned to be sealingly received within the opening of said vial when said cap is removed and replaced by said closure member, said cap including an inner tube disposed within said vial and constituting an inner extension of said collection tube.

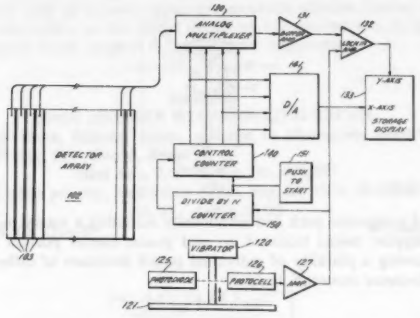
4,250,894
INSTRUMENT FOR VISCOELASTIC MEASUREMENT

Ephraim H. Frei; Bruce D. Sollish; Shmuel Yerushalmi, all of Rehovot; Sidney B. Lang, Beer-Sheva, and Mordechai Moshitzky, Rehovot, all of Israel, assignors to Yeda Research & Development Co., Ltd., Rehovot, Israel

Filed Nov. 14, 1978, Ser. No. 960,591
Int. Cl.³ A61B 10/00
U.S. Cl. 128—774 **8 Claims**

1. An instrument for viscoelastic measurement of human tissue comprising a thin, flat, flexible support sheet; a plurality of spaced transducer elements supported on said support sheet,

a planar pressure applying member in surface-to-surface contact with one surface of said support sheet for pressing said spaced transducer elements into a body being examined, means for applying a varying force to said pressure applying member



at a given frequency, and circuit means connected to each of said transducer elements for determining a difference in the output of adjacent elements which is indicative of an inclusion in said tissue.

4,250,895

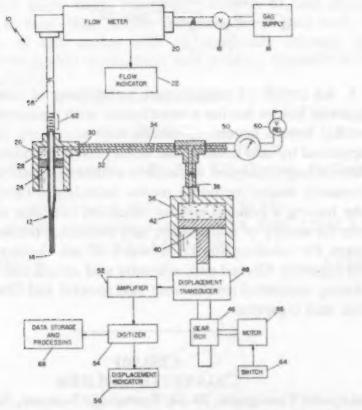
PERIODONTAL PROBE

Sidney Lees, Newton, Mass., assignor to Forsyth Dental Infirmary for Children, Boston, Mass.

Filed Mar. 23, 1979, Ser. No. 23,401

Int. Cl.³ A61B 5/10; A61C 19/04

U.S. Cl. 128—776 **21 Claims**



1. A periodontal apparatus to determine the depth of a periodontal pocket in the oral cavity of a patient, which apparatus comprises in combination:

(a) a periodontal probe characterized by an elongated element having a tip at the one end thereof for insertion into a periodontal pocket whose depth is to be determined, the tip end having a small passageway therein for the discharge of a fluid therethrough and from the tip of the probe;

(b) a source of fluid;

(c) means connecting the source of fluid with the periodontal probe, to permit the flow of fluid, at a constant controlled pressure, from the source to the probe and to permit the fluid to be discharged from the passageway at the probe tip; and

(d) flow-indicator means to determine the flow rate of the fluid being discharged from the passageway, whereby, on insertion of the probe tip into the periodontal pocket and as the probe tip approaches and contacts the bottom wall of the periodontal pocket, a rapid change in airflow measurement occurs, by means of which change in flow, the depth of the periodontal pocket may be determined.

4,250,896

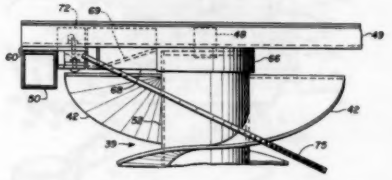
ANTI-WRAP MEANS

Robert A. Wagstaff; Steven J. Campbell, both of New Holland; Mark L. Cozine, East Earl, all of Pa.; Marc Christenson, Boring, Oreg., and Ray E. Nooyen, Leola, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Jun. 11, 1979, Ser. No. 47,386

Int. Cl.³ A01F 12/18

U.S. Cl. 130—27 T **8 Claims**



4. In a harvesting and threshing machine for harvesting crop material having a mobile frame, at least one threshing means mounted to first support means and second support means on the frame within a generally cylindrical casing and rotatable about a central axis passing through a first shaft and an opposing second shaft, the casing having an inlet end and an outlet end, the first support means being adjacent the inlet end the improvement comprising:

anti-wrap means having a generally annular member surrounding a portion of the shaft with an elongate guide member extending linearly outwardly therefrom a predetermined distance and including ramp means being angled generally rearwardly toward the outlet end fastened to the first support means adjacent the guide member to convey crop material outwardly from the first shaft and away from the inlet end generally toward the outlet end to prevent crop material buildup adjacent the shaft.

4,250,897

AXIAL FLOW ROTARY COMBINE HARVESTER WITH PLENUM-LIKE SEPARATOR HOUSING

Fritz Glaser, Zweibrücken, Fed. Rep. of Germany, assignor to Deere & Company, Moline, Ill.

Filed Sep. 19, 1979, Ser. No. 77,252

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842702

Int. Cl.³ A01F 12/18

U.S. Cl. 130—27 T **9 Claims**

1. An axial flow rotary combine comprising:

an elongated mobile body having a longitudinal axis and including a wall having opposite side, top and bottom and upstream and downstream end portions together defining a plenum-like enclosure;

an axial flow rotary separator including a generally cylindrical at least partially foraminous casing having upstream and downstream ends in crop material conducting communication with a crop material inlet and a straw outlet in the upstream and downstream wall portions respectively of the housing, and a rotor supported for rotation generally concentrically within the casing so as to define an annular space between the rotor and casing, the rotor and casing surfaces having juxtaposed material control elements;

a cleaning shoe including a generally horizontal sieve dis-

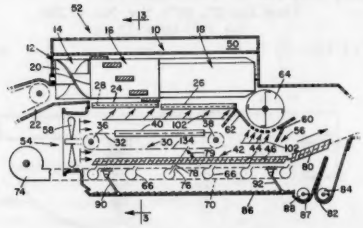
posed below and at least partially underlying the separator casing;

a cleaning air outlet in the wall downstream end portion and being of a first cross-sectional area;

a cleaning air inlet spaced upstream from the cleaning air outlet and being of a second cross-sectional area;

a blower connected to and operable to deliver cleaning air through the cleaning air inlet; and

gathering and conveying means carried by the body and operable to remove crop material from a field and deliver it through crop material inlet for engagement by the rotor, rotor and casing cooperating as the rotor rotates to propel crop material downstream in a generally spiral path and



process the material, a portion of the material including straw being retained within the casing for discharge at the straw discharge outlet and another portion of the material including grain and chaff tending to pass radially outwards through the foramina of the casing and pass downwards within the housing to be received by the sieve of the cleaning shoe, the cleaning air outlet being relatively smaller than the cleaning air inlet resulting in a plenum-like increase of air pressure in the enclosure and a pressure gradient through the foramina of the casing, inhibiting the movement of chaff through the foramina so that at least some of the chaff is retained within the casing and discharged through the straw discharge outlet.

4,250,898

CARBON DIOXIDE IMPREGNATION OF TOBACCO BY SUPER COOLING

Francis V. Utsch, Chester; Roger Z. de la Burde, Powhatan, and Patrick E. Aument, Hopewell, all of Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 13, 1978, Ser. No. 951,072
Int. Cl.³ A24B *3/18*
U.S. Cl. 131—140 P **8 Claims**

1. A process for impregnating tobacco with carbon dioxide comprising the steps of:

(a) contacting tobacco with gaseous carbon dioxide at a pressure of at least 50 psig; and

(b) rapidly cooling the carbon dioxide/tobacco system to a temperature where much of the carbon dioxide condenses and solidifies within the tobacco.

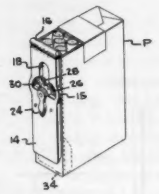
4,250,899

CIGARETTE PUNCHER

Franco Pagani, 1100 Newportville Rd., Apt. 908, Croydon, Pa. 19020

Filed Jul. 3, 1979, Ser. No. 54,578
Int. Cl.³ A24F *47/00, 13/24*
U.S. Cl. 131—170 R **8 Claims**

1. A cigarette puncher comprising a body member, an elongated guide slot in said body member of a width permitting the snug insertion of the end of a cigarette therein and an elongated punch member mounted in one end of said elongated guide slot having an axis parallel to the axis thereof, whereby a cigarette positioned in said slot can be moved into engagement with said elongated punch member to effect the punching of an aperture in the paper of the cigarette, wherein said body member includes a clip portion, a punch carrier portion connected to the clip portion by a bent end connector portion with the clip portion being of a width to be received snugly within one end



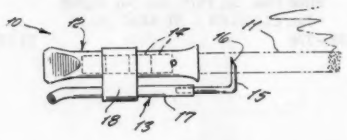
of a cigarette pack and additionally including a rotary punch support means mounted on said punch carrier portion and having a plurality of individual punch members of different diameter mounted thereon.

4,250,900

CIGARETTE FILTER HOLDERS WITH OPTIONAL SNORKEL BYPASS ACCESSORY

Robert A. Campbell, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed May 12, 1978, Ser. No. 905,474
Int. Cl.³ A24F *13/02*
U.S. Cl. 131—189 **6 Claims**



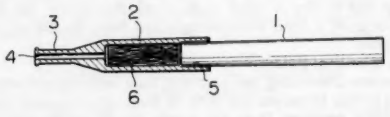
1. An article of manufacture comprising in combination a cigarette holder having a mouthpiece with a passageway and a snorkel bypass accessory means, said accessory means being supported by said holder, said holder having a tubular opening therethrough, adapted to receive a filtered cigarette end, said accessory means including means including a flexible snorkel tube having a pointed end for insertion in a side of said cigarette forwardly of said holder, said accessory means providing means for inhaling smoke forward of said holder bypassing said cigarette filtered end, whereby said article can be used for inhaling unfiltered smoke from said snorkel and filtered smoke from said cigarette.

4,250,901

CIGARETTE HOLDER

Takeyoshi Yamaguchi, 20-24, Tsurumaki 5-chome, Setagaya-ku, Tokyo 154, Japan

Filed Jul. 10, 1979, Ser. No. 56,428
Claims priority, application Japan, Sep. 22, 1978, 53-115823
Int. Cl.³ A24F *7/04*
U.S. Cl. 131—202 **1 Claim**



1. A cigarette holder comprising a substantially cylindrical holder body having a hollow chamber constricted to be of

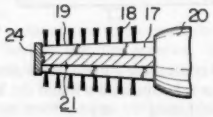
small diameter to define a mouthpiece at one end and having an opening at the other end dimensioned to insert therein the end of a cigarette, and a porous filter of substantially columnar shape contained in said chamber for filtering the products of combustion passing therethrough, said filter being impregnated with an aqueous hydrogen peroxide solution having a concentration in the range of 0.5 to 3.0 percent and in an amount in the range of 0.1 to 0.3 cubic centimeters.

4,250,902

HAIR DRESSER WITH ROLLING BRUSH

Sinji Ihara, Hikone, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 7, 1975, Ser. No. 602,907
Claims priority, application Japan, Sep. 16, 1974, 49-94508
Int. Cl.[2] A45D *20/00*
U.S. Cl. 132—9 **6 Claims**



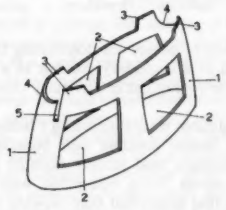
1. A hair dresser comprising, in combination,
a brush body comprising a columnar part including a plurality of ribs extending in axial direction and over the entire length of said columnar part, said ribs defining between adjacent ones thereof a plurality of air stream guiding channels extending also in said axial direction and over the entire length of the columnar part, a brush of bristles planted at regular intervals in the axial direction on top surfaces of the ribs; and
a dresser body housing a heater, a motor and a fan therein, said brush body being releasably coupled to said dresser body so that an air stream fed from the dresser body by means of said motor and fan optionally through said heater is guided throughout said guiding channels in the brush body.

4,250,903

SUPPORT FOR DRYING HAIR

Domenico Spaccapaniccia, (AP), Via XX Giugno, 16 Fermo, Italy

Filed May 2, 1979, Ser. No. 35,319
Claims priority, application Italy, May 16, 1978, 17912 A/78
Int. Cl.[3] A45D *1/00*
U.S. Cl. 132—9 **2 Claims**



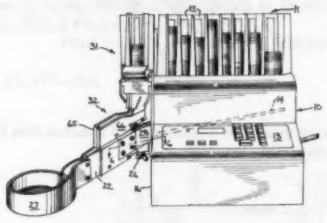
1. A support for hair rollers, characterised by an element of plastic material, having the form of a truncated cone, flattened sideways, to provide a continuous side wall of eliptical cross sectional shape, the sides of said element having several ventilation cutouts, the upper edge of said element having a semicircular cutout at each end in diametrically opposed relationship for supporting the ends of an associated hair roller on the top of said element, a pair of oppositely disposed, upstanding tabs on said element upper edge adjacent each of said semicircular cutouts for yieldingly retaining said associated hair roller supported on said cutouts, the lower edge of said element defined by a closed curve of intersection between the sides of said element and that of a sphere whose diameter coincides with the vertical axis of said element to thereby provide a curvilinear contour on said element lower edge conformint to the contour of the crown of a user's head.

4,250,904

COIN DISPENSER ATTACHMENT

William K. Lueschen, Pewaukee, Wis., assignor to Brandt, Inc., Watertown, Wis.

Filed Aug. 30, 1979, Ser. No. 71,061
Int. Cl.[3] G07D *1/06*
U.S. Cl. 133—2 **6 Claims**



1. An attachment kit having component parts capable of being assembled to a coin dispenser which includes an inclined discharge chute extending outwardly from a coin discharge point in a wall of the coin dispenser, said attachment kit comprising:
a funnel assembly adapted for mounting upon the discharge chute and including a funnel at one end and an inclined delivery chute leading from the funnel and extending to an exit point above the discharge chute at a distance remote from said discharge point; and
a separate coin storage and ejector assembly adapted for mounting on said wall of the coin dispenser without physical connection to said funnel assembly, said storage and ejector assembly including a coin magazine for receiving a stack of coins of a particular denomination, and a manually actuated ejector mechanism for removing coins one at a time from the stack and moving the coins to said funnel.

4,250,905

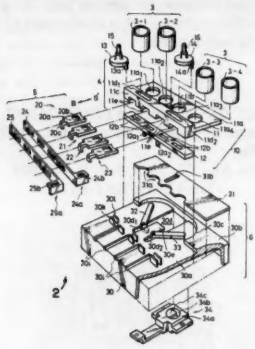
COIN DISPENSING MACHINE

Osamu Kobayashi, Sakado; Kohji Yukimoto, and Hiroshi Hayashi, both of Kawagoe, all of Japan, assignors to Nippon Coinco Co., Ltd., Tokyo, Japan

Filed Oct. 19, 1978, Ser. No. 952,817
Claims priority, application Japan, Oct. 21, 1977, 52-141586[U]
Int. Cl.[3] G07D *1/00*
U.S. Cl. 133—5 R **13 Claims**

1. A coin dispensing mechanism comprising:
a plurality of parallel coin tubes;
coin removal means for temporarily removing coins located at the bottom of said tubes, said coin removal means comprising:
a base plate disposed below said coin tubes,
a pay out slide plate located between the base plate and the bottoms of said coin tubes, said pay out slide including holes to receive coins from the coin tubes; and
reciprocating drive means for initially moving the pay out slide plate in a direction generally perpendicular to the coin tubes and subsequently returning the pay out slide plate to its original position;
coin selection control means for supporting all but a selected one of the removed coins in the coin removal means, said

coin selection control means including a plurality of movable platforms corresponding to said coin tubes for selectively supporting the removed coins and means for controlling the movement of the platforms; and



coin dispensing means for dispensing said selected coin from the coin dispensing machine.

4,250,906

FOLDING CARAVAN OF TENT CANVAS

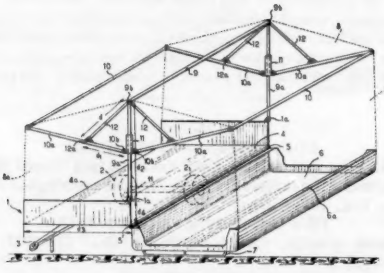
Paul Rivier; Claude Bucari, both of Rumilly; Samuel Topalian, Eybens, and Alain Baud, Echirolles, all of France, assignors to Andre Jamet, Grenoble, France

Filed Jan. 30, 1979, Ser. No. 7,925

Claims priority, application France, Apr. 20, 1978, 78 11678

Int. Cl.³ B60P *3/34;* A45F *1/00*

U.S. Cl. 135—1 A **7 Claims**



1. A folding caravan comprising a trailer containing a canvas tent which can be unfolded from said trailer after opening a cover which is hinged on one of the edges of the trailer, the tent being supported in unfolded position by a central ridge pole pivotally mounted on the trailer by means of posts and two roof-edge poles pivotally connected to the central ridge pole posts by arms whose opposite ends are mounted on members slidably mounted on the said posts, a point on the said arms being pivotally linked to the free end of the said posts by means of linking rods, in such a way that when opening the trailer cover, the posts are brought to a vertical position and the roof edge poles simultaneously fan out from the central ridge pole and the tent canvas is stretched only by the pulling force exerted by the trailer cover through the canvas on the system of slidable arms and linking rods.

4,250,907

FLOAT VALVE ASSEMBLY

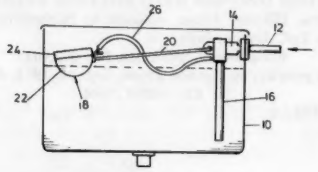
Edmund E. Struckman, 46 Charles Henwood Ave., Southridge, Durban, and Harold S. Larsen, 27B Northcliffe Ave., Westville Durban, both of South Africa

Filed Dec. 19, 1978, Ser. No. 970,978

Claims priority, application South Africa, Oct. 9, 1978, 78/5708

Int. Cl.³ F16K *21/18, 31/18*

U.S. Cl. 137—1 **7 Claims**



6. A method of controlling a liquid level control valve actuated by a float that is buoyant on a liquid the level of which is to be controlled, including the steps of forming a receptacle for the liquid on the float, forming a single fluid path into and out of the receptacle; causing liquid to flow from the valve into the receptacle through the fluid path when the valve is opened to bias the float downwardly, with the liquid flow being directed to dam any liquid in the receptacle when the liquid flow is above a predetermined rate; and permitting the flow of liquid to decrease when the liquid level approaches a predetermined level so that any liquid in the receptacle may flow out through said single fluid path to remove the bias on the float and allow the float to rise thereby to cause the valve to close rapidly.

4,250,908

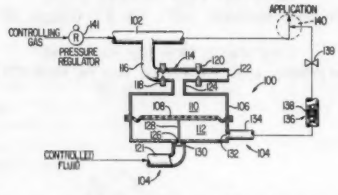
FLOW CONTROL DEVICE

Wallace W. Velie, 520 W. Emerson St., Upland, Calif. 91786

Filed Mar. 29, 1979, Ser. No. 25,005

Int. Cl.³ F16K *19/00;* G05D *11/02*

U.S. Cl. 137—7 **11 Claims**



1. A flow control device for controlling the pressure of a controlled fluid in a secondary conduit as a function of the pressure of a controlling gas in a primary conduit, said device comprising:

a pressure regulator means including a housing and pressure responsive means dividing said housing into first and second chambers, said second chamber of said pressure regulator means being connected with the secondary conduit so that controlled fluid flowing through the secondary conduit passes through said second chamber;

pressure divider means in communication with the primary conduit and said first chamber so that the pressure in said first chamber is a function of the pressure of said controlling gas in the primary conduit;

valve means connected to said pressure responsive means for controlling fluid communication between an upstream portion of the secondary conduit and said second chamber, said valve means being movable between a first, blocking position preventing fluid flow through said sec-

ond chamber, and a second flow modulating position permitting and controlling fluid flow through said second chamber, said valve means moving in response to changes in pressure applied to said first chamber so that fluid flow through said second chamber is a function of the pressure of said controlling gas, said valve means being in said blocking position when the pressure in said first chamber is less than a predetermined pressure; and

means for defining a predetermined fixed pressure loss in communication with one of said pressure divider means and the secondary conduit so that a variation in pressure of said controlling gas results in a different variation in pressure of said controlled fluid.

6. A method for controlling the pressure of a controlled fluid in a secondary conduit as a function of the pressure of a pressurized controlling gas in a primary conduit, said method comprising:

reducing the pressure of said controlling gas to a pressure above atmospheric pressure in a manner such that said reduced pressure varies as a function of said controlling gas pressure;

balancing said reduced pressure against the pressure of said controlled fluid so that the pressure of said controlled fluid is a function of said reduced pressure; and

subjecting one of said controlling gas and said controlled fluid to a fixed pressure loss so that a variation in pressure of said controlling gas results in a different variation in pressure of said controlled fluid.

4,250,909
FLOW CONTROL VALVE

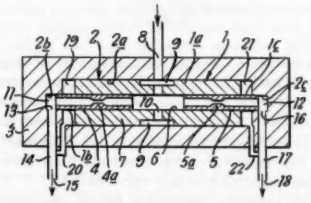
Frederick J. Adams, Avon, England, assignor to Cam Gears Limited, Hertfordshire, England

Filed Oct. 16, 1978, Ser. No. 951,587

Claims priority, application United Kingdom, Oct. 17, 1977, 43062/77

Int. Cl.³ G05D *11/03*

U.S. Cl. 137—101 **8 Claims**



1. A flow divider valve comprising a valve housing having an inlet and first and second outlets, a cylindrical passage within said housing, a spool valve member axially slidable within said cylindrical passage for dividing a flow from said fluid inlet into first and second outlet flows and for maintaining said outlet flows in a predetermined constant ratio regardless of back pressure in said outlets, said spool valve member having a central passage through which fluid flows from said inlet to said first and second outlets, said spool valve member having first and second surfaces against which fluid pressure acts, said spool valve member moving in one direction in said passage in said valve housing in response to an excess of fluid pressure acting on said first surface over the fluid pressure acting on said second surface to effect throttling at a first location of said first outlet flow, said valve spool member moving in a second direction in said passage in said valve housing in response to an excess of fluid pressure acting on said second one of said surfaces over the pressure acting on said first one of said surfaces to effect throttling at a second location of said second outlet flow, a passage communicating the fluid pressure in said first outlet from a location downstream of said first throttling location to said second surface, a passage communicating the fluid pressure in said second outlet from a location downstream of said second throttling location to said first surface, and first and second fixed-area flow restrictors, said first fixed-area flow restrictor being disposed between said inlet and said first fluid outlet upstream of said first throttling location, whereby the fluid forming said first outlet flow flows through said first fixed-area flow restrictor and said second fixed-area flow restrictor being disposed between said inlet and said second fluid outlet upstream of said second throttling location whereby the fluid forming said second outlet flow flows through said second fixed-area flow restrictor, said first and second fixed-area flow restrictors each having a constant cross sectional area through which fluid may flow regardless of the axial position of said spool valve member in said passage.

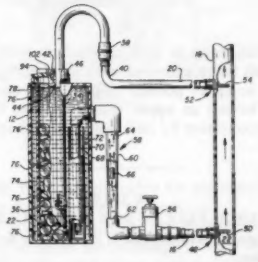
4,250,910
IN-LINE APPARATUS FOR DISSOLVING A SOLID IN A LIQUID

Robert C. King, Irving, Tex., assignor to Holiday Industries, Inc., Grand Prairie, Tex.

Filed Aug. 31, 1978, Ser. No. 938,415

Int. Cl.³ E03B *11/00*

U.S. Cl. 137—268 **9 Claims**



1. An apparatus for dissolving a solid in a liquid flowing in a liquid line, comprising in combination:

a tank for holding the solid to be dissolved;

an intake line for connecting the liquid line in fluid communication with the tank for bringing liquid from the liquid line into the tank wherein the tank end of the intake line extends downwardly into the tank;

a return line for connecting the tank in fluid communication with the liquid line for returning the liquid from the tank into the liquid line wherein the tank end of the return line is inserted an adjustable depth into the tank whereby liquid passes through the tank from the intake line to the return line over the exposed surface of the solid, dissolving the solid and the rate of dissolving the solid can be adjusted by adjusting the depth of the tank end of the return line; and

a substantially vertical pipe extending from the bottom of the tank substantially to the top of the downwardly extending portion of the intake line encircling the downwardly extending portion of the intake line, restable on the bottom of the tank, the wall of the intake line forming at least one hole below the top of the encircling pipe.

4,250,911
CHEMICAL FEEDER WITH DISPOSABLE CHEMICAL CONTAINER

David W. Kratz, 17 Country Life Acres, St. Louis, Mo. 63131

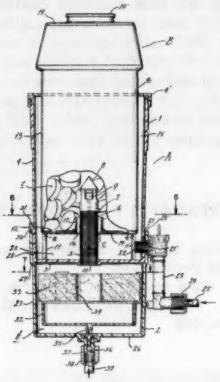
Continuation-in-part of Ser. No. 899,265, Apr. 24, 1978. This application Sep. 28, 1979, Ser. No. 79,691

Int. Cl.³ B01D *11/02*

U.S. Cl. 137—268 **6 Claims**

1. The combination of a chemical feeder for liquid circulating systems comprising a casing having a base wall and a side

wall, a vertically presented weir engaged in said base wall, and a replaceable chemical-bearing container receivable within said casing, said container having a bottom wall and a side wall, means provided in said casing supportingly engaging said container bottom wall for presenting the container in vertically



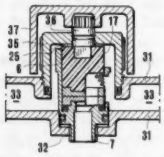
spaced relationship to said casing base wall, said container bottom wall being provided with an opening, said weir projecting in its upper portion through said container opening, said weir having an upper end of tapered configuration to facilitate penetration by said weir of the chemical within said container.

4,250,912

CARTRIDGE FAUCET FOR HYDRAULIC SYSTEMS

Alfons Knapp, Bleicherstrasse 3, Biblrach an der Riss, Fed. Rep. of Germany

Filed Oct. 1, 1979, Ser. No. 80,316
Claims priority, application Italy, Oct. 20, 1978, 69405 A/78
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—315 **10 Claims**



1. In a faucet for a hydraulic system, comprising a faucet body having an inlet union and an outlet union, a cover removably fixed to said body, and a cartridge extractably mounted in said body and retained therein by said cover, said cartridge comprising a stationary envelope and, in said envelope, a rotatable portion, a first stationary plate and a second rotatable plate coupled with said rotatable portion of the cartridge, said first and second plates being slidingly arranged the one against the other and having through apertures cooperable in controlling a water flow from said inlet union to said outlet union,

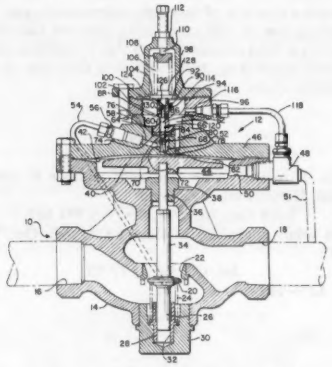
the improvement that said faucet body has an inner non circular bore, said cartridge envelope has a non circular portion cooperable with said non circular bore of the faucet body in coupling said envelope in non rotatable but axially displaceable relationship with said body, said rotatable portion of the cartridge has a shoulder resting against the inner surface of said cover, said stationary plate is sealingly inserted in the bottom of said cartridge envelope and said rotatable plate is coupled in resting and solid in rotation relationship with said rotatable portion of the cartridge.

4,250,913

PILOT MECHANISM FOR PRESSURE REGULATING VALVE

William L. Scull, Rockaway Township, Morris County, N.J., assignor to Leslie Co., Parsippany, N.J.

Filed May 7, 1979, Ser. No. 36,664
Int. Cl.³ F16K *31/365*
U.S. Cl. 137—488 **26 Claims**



1. A pilot operated pressure regulating valve comprising:

a main valve casing having a valve inlet, a valve outlet, and a main valve seat and cooperating main valve plug member interposed between said valve inlet and said valve outlet, the position of said main valve plug member relative to said main valve seat controlling the flow of fluid from said valve inlet to said valve outlet;

main valve pressure responsive means operatively connected to said valve plug member for moving said main valve plug member to control the flow of fluid from said valve inlet to said valve outlet;

pilot valve means for controlling the supply of a loading fluid from a source of loading fluid at a predetermined pressure about the pressure of the fluid exiting from said main valve through said valve outlet to one side of said main valve pressure responsive means; and

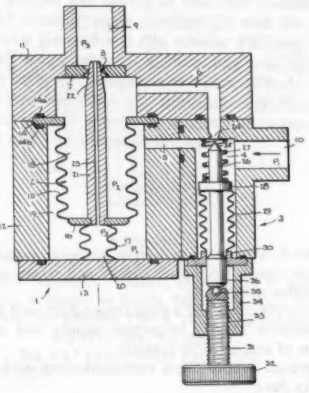
pilot valve pressure responsive means for controlling the position of said pilot valve means to control the flow of loading fluid supplied to said main valve pressure responsive means, said pilot valve pressure responsive means being responsive to the pressure of the fluid exiting through said valve outlet and to the pressure of the loading fluid supplied to said main valve pressure responsive means so that for a predetermined incremental change in pressure of the fluid exiting through said valve outlet, the position of said pilot valve means is changed to effect a predetermined fixed change in the pressure of said loading fluid supplied to said main valve pressure responsive means independent of said predetermined pressure of said loading fluid at said source of loading fluid.

4,250,914

FLOW REGULATOR

Antonio Ferrentino, Monza, Italy, assignor to Industrie Pirelli Societa per Azioni, Milan, Italy

Filed Nov. 7, 1978, Ser. No. 958,516
Claims priority, application Italy, Dec. 1, 1977, 30222 A/77
Int. Cl.[3] G05D 7/01
U.S. Cl. 137—501 5 Claims



1. A valve for regulating the flow of a fluid, said valve comprising:

a valve body having an internal cavity, a fluid inlet, a fluid outlet and an opening permitting fluid flow from said cavity to said outlet;

a first movable, fluid impermeable bellows in said cavity, one end of said first bellows being connected in fluid-tight relation to a wall of said cavity and having a base connected in fluid-tight relation with the other end thereof to form a first chamber within said first bellows and a second chamber outside said first bellows with said opening at one wall of said first chamber, said first bellows being movable by fluid in said chambers;

fluid conduit means interconnecting said fluid inlet with said first and second chambers;

pressure controlling means in said fluid conduit means for controlling the difference in pressure between the fluid in said first chamber and the fluid in said second chamber;

opening varying means for varying the area of said opening, said opening varying means being connected to said base and extending to said opening, said opening varying means being subject to the pressure of the fluid in said outlet and being movable by said first bellows for varying the area of said opening dependent upon the difference between fluid pressure in said second chamber and the fluid pressure in said first chamber whereby the flow of fluid from said inlet to said outlet may be varied; and

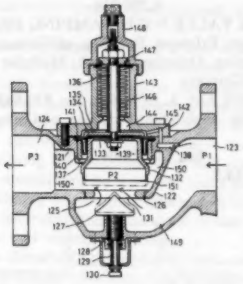
a second movable, fluid impermeable bellows acting between said body and said base, said second bellows being mounted coaxially with said first bellows and one end of said second bellows being connected in fluid-tight relation to a side of said base which is outside said first bellows and the other end of said second bellows being connected in fluid-tight relation to a wall of said cavity outside said first chamber to form a third chamber within said second chamber, said third chamber being out of fluid communication with said first and second chambers and being in fluid communication with said fluid outlet and said second bellows being proportioned and positioned to apply a force to said opening varying means in a direction which decreases the area of said opening which is substantially equal to the force applied to said opening varying means by fluid in said fluid outlet in a direction which increases the area of said opening, whereby the area of said opening is substantially independent of the pressure of the fluid in said outlet and is dependent on the pressure difference between the fluid in said first chamber and the fluid in said second chamber.

4,250,915

AUTOMATIC CONTROLLING VALVE FOR MAINTAINING THE RATE OF FLUID FLOW AT A CONSTANT VALUE

Sotokazu Rikuta, 24-7, 2-chome, Koun-cho, Maebashi-shi, Gunma-ken, Japan (371)

Division of Ser. No. 871,565, Jan. 23, 1978, Pat. No. 4,210,171.
This application Jul. 13, 1979, Ser. No. 57,470
Claims priority, application Japan, Nov. 17, 1977, 52-138354
Int. Cl.[3] G05D 7/01
U.S. Cl. 137—501 2 Claims



1. An automatic fluid control valve for maintaining a substantially constant fluid flow rate comprising:

a valve casing having an inlet for the introduction of fluid thereinto and an outlet for discharge of fluid therefrom;

a partition wall within said casing between said fluid inlet and said fluid outlet, said partition wall having a valve port therein establishing communication between said fluid inlet and said fluid outlet, said partition wall including a horizontally extending portion in which said valve port is formed, said partition wall subdividing said valve casing into an inlet chamber and an outlet chamber located on the opposed sides thereof;

a restriction adjusting member mounted movably in a wall of said valve casing and including a tapered end movable relative to said valve port to define a restricted passageway for fluids with the adjacent walls of said valve port, said restricted passageway being of variable cross-sectional area settable to establish a predetermined fluid flow rate through the control valve located intermediate said fluid inlet and said outlet and thereby establishing first and second fluid pressures respectively on the upstream and downstream sides of said restricted passageway,

a valve stem movable linearly within said casing and having valve means thereon cooperable with said valve port to regulate the flow of fluids therethrough in response to changes in fluid pressure differential, said valve stem having a valve plug at the lower end thereof cooperable with said valve port at the side thereof opposite from said restriction adjusting member, said restriction adjusting member being movable to establish a predetermined cross-sectional flow area for said restricted passageway for fluids,

a spring case mounted on said valve casing extending outwardly thereof to enclose the upper portion of said valve stem,

diaphragm means operatively connected to said valve stem and separating a region within said valve casing into a pair of pressure-differential chambers, said diaphragm being a bellows-diaphragm the peripheral edge of which is posi-

tioned between said valve casing and a flange integral with said spring case to thereby provide one pressure-differential chamber thereabove and another pressure-differential chamber therebelow, and

means comprising a flow passage formed in said casing and spring case communicating said one pressure-differential chamber with said inlet chamber, said other pressure-differential chamber communicating with the downstream side of said valve port.

4,250,916

CHECK VALVE WITH DAMPING DEVICE

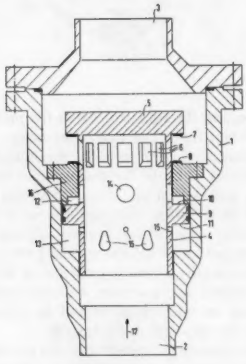
Jürgen Hoffmann, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim an der Ruhr, Fed. Rep. of Germany

Filed Aug. 3, 1978, Ser. No. 930,563

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1977, 2736076

Int. Cl.³ F16K *15/06*

U.S. Cl. 137—514.5 **1 Claim**



1. A check valve assembly having a damping device for liquid lines, comprising a valve body having a flow passage therethrough and a hollow cylindrical chamber surrounding said flow passage, a valve seat in said flow passage, an axially movably supported closure member being movable between an open position of the check valve and a closed position of the check valve in which said closure member lies on said valve seat, a hollow cylindrical guide member conneced to said closure member having a shell defining an inner space through which fluid flows in the open position of the closure member, and a damping piston having two sides and being disposed on the outer periphery of said guide member, said damping piston being firmly connected to said guide member and axially movably guidable in said hollow cylindrical chamber as said closure member moves between the open and closed positions, and said shell having throttle openings formed therein at both of said sides of said damping piston for connecting said hollow cylindrical chamber with said inner space, said throttle openings being positioned and dimensioned such that openings positioned on one side of said damping piston can progressively restrict flow as said closure member moves toward the open position and such that openings on the other side of said damping piston can progressively restrict flow as said closure member moves toward the closed position.

4,250,917

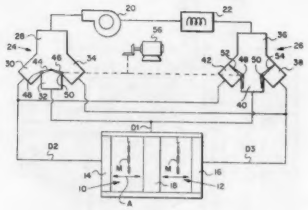
AIR FLOW REVERSER SYSTEM

Knud Jespersen, Terracotta; Hans L. Bergner, Mississauga, and Guy E. Buller-Colthurst, Rexdale, all of Canada, assignors to Knud Simonsen Industries Limited, Rexdale, Canada

Filed Nov. 13, 1978, Ser. No. 959,832

Int. Cl.³ F26B *21/04*

U.S. Cl. 137—563 **8 Claims**



1. An air flow reverser apparatus for use in association with an air flow system having air supply and return port means, said apparatus comprising;

a main supply duct, and a main return duct, said ducts being connectable to said respective supply and return port means of said air flow system;

three branch supply ducts communicating with said main supply duct;

three branch return ducts communicating with said main return duct;

supply damper means movably operable for selectively shutting off either one, or two of said branch supply ducts, while leaving the remainder of said branch supply ducts open;

return damper means movably operable for selectively shutting off either two, or one of said branch return ducts while leaving the remainder of said branch return ducts open;

means interconnecting said supply and return damper means for movement in unison whereby when a selection of said branch supply ducts is closed, a selection of said branch return ducts is open, and,

power operated means for moving the same from one position to another, simultaneously.

4,250,918

ROTARY JOINT DEVICE WITH MULTIPLE PIPING PASSAGES, IN PARTICULAR FOR LOADING OR TRANSFER COLUMNS ON MARINE SITES

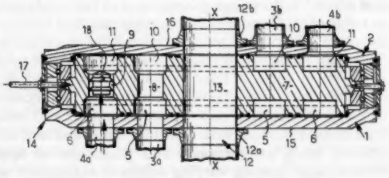
Samuel Tuson, Mesnil-le-Roi, and Jean-Pierre Ghilardi, La Bouffemont, both of France, assignors to Entrepise d'Equipments Mechanique set Hydrauliques E.M.H., France

Filed Dec. 18, 1978, Ser. No. 970,179

Claims priority, application France, Dec. 30, 1977, 77 39823

Int. Cl.³ F16L *27/00, 39/04*

U.S. Cl. 137—580 **9 Claims**



1. In a rotary joint device with multiple piping passages including a stationary portion and a rotary portion, at least one piping eccentric to the axis of rotation of the said rotary joint

and constituted by a first, stationary conduit secured to the stationary portion of said rotary joint and by a second, rotary conduit variable in angular position and connected to said rotary portion, said first and second conduits communicating with one another through a first, substantially concentric annular duct provided in the joint, the improvement comprising: a coaxial rotary member interposed between said stationary and rotary portions mounted so as to be rotatable independently of said rotary portion and having at least one conduit formed therethrough communicating permanently with the first stationary conduit through said first annular duct and with the second rotary conduit through a connecting path, said at least one conduit being so arranged as to be movable, by rotating said coaxial rotary member, into substantial alignment with at least said first conduit, whereby a scraper tool or pipe cleaner can thereby easily pass through the joint.

4,250,919

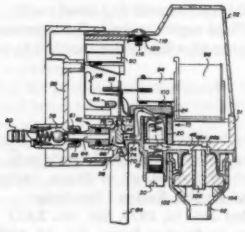
CONSTANT FLOW VALVE

Jack J. Booth; William C. Branch, and Robert P. Kidd, all of Dallas, Tex., assignors to Booth, Inc., Carrollton, Tex.

Division of Ser. No. 876,001, Feb. 8, 1978. This application Jul. 11, 1979, Ser. No. 56,627

Int. Cl.³ F16K *19/00*; G05D *7/01*

U.S. Cl. 137—607 **6 Claims**



1. A dispensing valve including means for automatically regulating selected rates of fluid flow in syrup and water flow channels under varying fluid source pressures comprising:

(a) means to initiate and terminate flow from said sources through said valve,

(b) a valve body having two cylindrical bores therein each defining a chamber, said body having inlet ports for each bore and a single outlet port through the side of each bore;

(c) a piston disposed within each said cylindrical chamber each comprising a piston head portion and a skirt portion defining a hollow interior and each sized to permit fluid flow around its periphery to its chamber outlet, each said piston being axially movable within its cylindrical chamber in response to the pressure of the fluid introduced into its chamber to regulate the fluid flow through the associated outlet port by the skirt portion acting as a shutter to increase or decrease the available flow area through the associated outlet port in inverse proportion to changes in the fluid pressure at the inlet port;

(d) two springs, one disposed on the downstream side of each said piston that extends into the hollow interior of said piston and engages the underside of the piston head portion, said spring yieldably opposing axial downstream movement of said piston; and

(e) adjustment means carried in said valve body for setting the opposing force of said springs and the axial positioning of said pistons within the cylindrical chambers in said valve body.

4,250,920

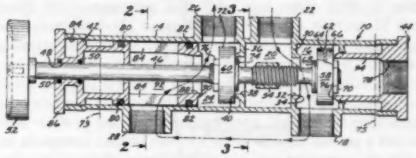
VALVE FOR WATER TREATMENT EQUIPMENT

Paul L. Traylor, 16591 Milliken Ave., Irvine, Calif. 92714

Filed Nov. 6, 1978, Ser. No. 958,347

Int. Cl.³ F16K *11/02*

U.S. Cl. 137—625.29 **5 Claims**



1. A valve for water treatment equipment, said valve comprising:

a casing including means defining a first chamber having a treatment inlet port, a second chamber having a supply port, a third chamber having a distribution port, and a fourth chamber having a treatment outlet port, said means further defining a passage between said first and second chambers surrounded by a first valve seat, said means further defining a passage between said second and third chambers surrounded by a second valve seat, said means further defining a passage between said third and fourth chambers surrounded by a third valve seat in confronting relation to said second valve seat;

a valve stem threadably supported by said casing and rotatable to move said valve stem longitudinally; and

first and second valve heads mounted to and movable with said valve stem toward a service position in which a face of said first valve head is unseated from said first valve seat, and opposite faces of said second valve head are seated upon said second valve seat and unseated from said third valve seat, respectively, to direct water from said supply port to said treatment inlet port and from said treatment outlet port to said distribution port, said first and second valve heads being movable with said valve stem toward a by-pass position in which said face of said first valve head is seated upon said first valve seat, and said opposite faces of said second valve head are unseated from said second valve seat and seated upon said third valve seat, respectively, to direct water from said supply port through said second chamber between said first and second valve heads to said distribution port, said casing including a threaded boss located in said second chamber, and providing the threaded support for said valve stem, whereby said first and second valve heads are accessible from opposite ends of said casing.

4,250,921

RESERVE METERING VALVE

Wayne H. Pingel, and Donna M. Pingel, both of Rte. #1 Box 171, Grand Marsh, Wis. 53936

Division of Ser. No. 904,666, May 10, 1978, abandoned. This application Apr. 23, 1979, Ser. No. 32,076

Int. Cl.³ F16K *11/083*

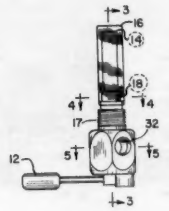
U.S. Cl. 137—625.41 **1 Claim**

1. A reserve metering valve comprising:

a hollowed support casing having formed thereon an inlet extension, said inlet extension having a plurality of spaced inlet ports defined along the length thereof, and wherein one of said inlet ports is axially aligned with said inlet extension and of substantially the same diameter to maximize the flow therethrough, and said support casing further having formed thereon an outlet port oriented to provide flow therethrough in a direction substantially perpendicular to the direction of flow through the said inlet extension; and

a port selection member arranged in sealing engagement and

mounted for selective rotation within said support casing and having a hollowed inlet extension defined thereon extending along the inlet extension of said support casing and having an opening at the extremity thereof coincident



with said axially aligned inlet port, said port selection member further comprising a tapered plug portion arranged to sealingly engage the support casing; and

means for urging the port selection member into sealing engagement with the hollowed support casing.

4,250,922

ELECTROMAGNETICALLY OPERATED CONTROL VALVE

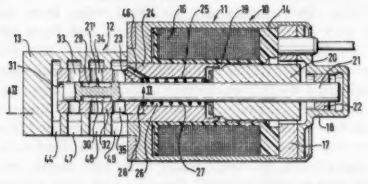
Gerhard Will, Steinheim, and Walter Stroh, Cleebronn, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 24, 1979, Ser. No. 42,063

Claims priority, application Fed. Rep. of Germany, May 24, 1978, 2822597

Int. Cl.³ F15B *13/044*

U.S. Cl. 137—625.65 **7 Claims**



1. In an electromagnetically operating sliding spool control valve particularly for controlling the shift of a transmission system of a motor vehicle by directing a pressure fluid to a load port and alternatively to a return fluid port, a combination comprising an electromagnet having a tubular-shaped coil, a fixed magnetizable core arranged in said coil and defining a central passage, a valve sleeve connected to one end of said core, a plunger projecting through said tubular core into said sleeve, and an armature facing the other end of said core and coaxially surrounding said plunger in connected relationship for joint movement with the plunger, the end portion of said plunger defining grooves and piston areas forming said valve spool, and a return spring disposed between said core and said armature.

4,250,923

SHIFT ACTUATOR FOR A MULTI-SPEED TRANSMISSION

Mark R. Johnson, 2081 Essenay Ave., Walnut Creek, Calif. 94596

Filed Nov. 13, 1978, Ser. No. 960,016

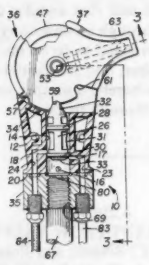
Int. Cl.³ F16K *11/07, 31/524*

U.S. Cl. 137—625.69 **10 Claims**

10. A shift actuator for controlling the overdrive and the range section of a multi-speed transmission, the multi-speed transmission including a source of pressurized air and a shifting cane, the shift actuator comprising:

a valve body mountable on said shifting cane, said valve body defining a longitudinal bore, said valve body further defining first, second and third spaced apart ports communicating with said longitudinal bore, said first port for communication with said source of fluid pressure;

closure means for sealing one end of said bore adjacent said first port;



a valve spool slidably positioned in said bore;

rotary cam means pivotally mounted on said valve body for selectively positioning said valve spool in said bore to (1) block said second and third ports, (2) communicate said first port with said second port or (3) communicate said first port with said second and third ports;

the source of fluid under pressure for communicating with said first port to urge said valve spool away from said first port.

4,250,924

ELECTROMAGNETIC CONTROL VALVE ASSEMBLY

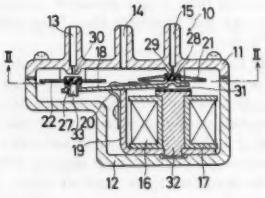
Naoji Sakakibara, Chiryu; Nobuyuki Hashimoto, and Tsukasa Watanabe, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya City, Japan

Filed Jan. 16, 1979, Ser. No. 3,822

Claims priority, application Japan, Jan. 17, 1978, 53-3510

Int. Cl.³ F15B *13/044;* **F16K** *11/16*

U.S. Cl. 137—868 **3 Claims**



3. An electromagnetic control valve assembly comprising a hollow body having first and second ports extending therethrough, valve means associated with each of said first and second ports, each valve means comprising leaf spring means secured in said body adjacent to and spaced from a respective port and a valve member secured to said leaf spring means for movement into and out of engagement with a valve seat surrounding the respective port, said valve member being urged in one direction by the biasing force of said leaf spring means, an elongated valve actuator lever pivotably mounted in said body with the opposite ends thereof disposed in contact with said valve members, further spring means normally biasing said lever for rotation in a direction to move one of said valve members against the biasing force of said leaf spring means, and electromagnetic means operable to rotate said lever in the

opposite direction to move the other valve member against the biasing force of said leaf spring means and said further spring means, said leaf spring means always biasing said valve members in said one direction where said valve members are spaced from said valve seats, said further spring means biases said lever to thereby move said one of said valve members into engagement with its corresponding valve seat against said leaf spring means and said electromagnetic means is operable to rotate said lever to move the other valve member into engagement with its corresponding valve seat.

4,250,925

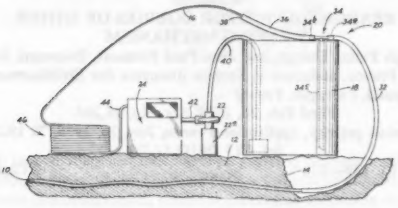
PIPE UNFREEZER

Kenrick H. Mast, 25333 Alpine La., Bend, Oreg. 97701

Filed Jul. 13, 1979, Ser. No. 57,207

Int. Cl.³ F16L *55/00;* **E03B** *7/14;* **B08B** *9/02*

U.S. Cl. 138—35 **8 Claims**



1. Apparatus for thawing frozen water pipe comprising a stiff but pliant feed tube which is adapted to be inserted into and then thrust along the interior of the frozen pipe which tube terminates at a probing end,

a tip forming the probing end of the tube which leads the tube on such being advanced along the interior of the pipe,

said tip being formed by side expanses that converge on each other progressing toward the end of the tip and there being openings defined between side expanses accommodating the ejection of water through the tip laterally and in a forward direction while the tube is advanced within the pipe.

4,250,926

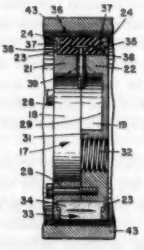
CLOSURE DEVICE WITH PERIPHERAL DOUBLE ACTING INFLATABLE SEAL

J. Glenn Satterthwaite, 4408 Point West Dr., and Dennis M. Riddleberger, 3517 Marlyn Rd., both of Portsmouth, Va. 23703

Continuation of Ser. No. 699,676, Jun. 25, 1976, abandoned. This application Oct. 3, 1979, Ser. No. 81,511

Int. Cl.³ F16L *55/12*

U.S. Cl. 138—90 **37 Claims**



1. A seal element adapted to be peripherally carried by a closure device, comprising:

(a) an inflatable, substantially loop shaped body component formed of an initially straight length of elastomeric material subsequently bent into a loop with the initially free ends thereof congruently adhesively bonded together, said body component including an inner wall having an exterior surface surrounding a longitudinal axis of said seal element body component, an outer wall having an exterior surface substantially concentrically parallel to said exterior surface of said inner wall thereof when said seal element body component is uninflated, and a pair of side walls interconnecting said inner and outer walls of said seal element body component, at least a portion of the exterior surface of each of said side walls of said seal element body component being operationally substantially situated in a plane substantially perpendicular to said longitudinal axis of said seal element body component, said walls of said seal element body component enclosing an elongated central cavity formed therein having a major axis substantially equidistantly situated between said exterior surfaces of said inner and outer walls of said seal element body component and extending more than half of the distance between said exterior surfaces of said side walls of said seal element body component with the midpoint of said major axis of said central cavity of said seal element body component substantially equidistantly spaced from said exterior surfaces of said side walls thereof; said elongated central cavity of said seal element body component having a minor axis measuring only a small fraction of the length of said major axis thereof when said seal element body component is uninflated; and,

(b) an air valve extending through one of said walls of said body component of said seal element for fluid communication with said central cavity thereof.

4,250,927

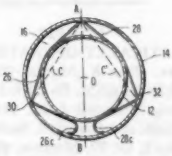
DUCT SPACER CLIP AND DUCT ASSEMBLY

Arthur G. Newburg, Dover, Fla., assignor to Piper Aircraft Corporation, Greenwich, Conn.

Filed Aug. 24, 1979, Ser. No. 69,475

Int. Cl.³ F16L *9/18;* **A44B** *21/00*

U.S. Cl. 138—113 **11 Claims**



1. A clip for spacing inner and outer tubes substantially concentrically one relative to the other, comprising:

an elongated strip of resilient material formed substantially medially of its length to define a first apex and a pair of angularly related segments substantially symmetrical one to the other on opposite sides of a plane bisecting the angle formed between said segments, each of said segments including a first segment portion extending from said first apex in a direction away from said plane of symmetry and at an acute angle relative thereto, a second segment portion extending from the end of said first segment portion remote from said apex and in a direction toward said plane of symmetry to define with said first segment portion a second apex, and a third segment portion reversely formed adjacent the end of the second segment portion remote from said second apex to end in a direction away from said plane of symmetry to define a bearing surface, said third segment portions being spaced one from the other on opposite sides of said plane of symmetry, whereby, upon resilient movement of said first, second, and third segment portions on respective opposite sides of said plane of symmetry toward the plane of symmetry and

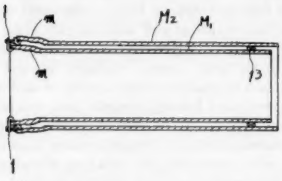
disposition of said clip in the annular space between said inner and outer tubes, said first and second apices and said bearing surfaces are adapted to resiliently bear against the outer tube and the first and second segment portions of each segment are adapted to resiliently bear against the inner tube.

4,250,928

DEVICE FOR HOLDING NESTED PIPES TO ONE ANOTHER

Munehiro Nishikawa, Ichikawa, Japan, assignor to Kubota, Ltd., Osaka, Japan

Filed Nov. 15, 1979, Ser. No. 94,367
Claims priority, application Japan, May 2, 1979, 54-54544; May 2, 1979, 54-54545; May 2, 1979, 54-54546
Int. Cl.[3] F16L *9/18, 11/00*
U.S. Cl. 138—113 **12 Claims**



1. A device for holding nested pipes to one another comprising:

a hook member having a bent portion engageable with a projection projecting radially inwardly from one end of an outer pipe, from opposite sides axially thereof and further engageable with an outer peripheral shoulder portion of one end of an inner pipe,

an engaging member at least engageable with one end face of the inner pipe, and

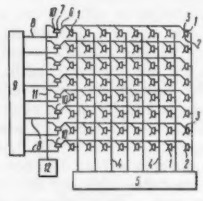
screw means for fastening the hook member and the engaging member to each other.

4,250,929

PNEUMATICALLY OPERATED SWITCH

Evgeny I. Andreev, ulitsa K. Marxa, 10, kv. 98; Mikhail A. Bykov, ulitsa 50 let VLKSM, 10-a, kv. 31; Anatoly K. Zolotarev, ulitsa Isaeva, 2, korpus 2, kv. 116, all of Kaliningrad, Moskovskoi oblasti, and Dmitry S. Sazhin, ulitsa Mosfilmovskaya, 11, korpus 1, kv. 77, Moscow, all of U.S.S.R.

Filed Oct. 22, 1979, Ser. No. 86,774
Int. Cl.[3] F16K *31/12*
U.S. Cl. 137—607 **19 Claims**



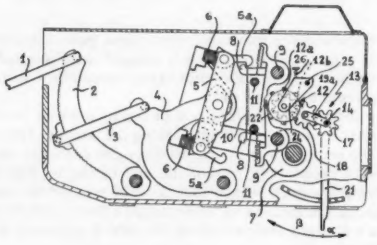
1. A pneumatically operated switch comprising: chambers; elastic walls of said chambers; inlet and outlet ports of said chambers; said inlet ports of said chambers coupled with data sources; said chambers arranged in the form of an array; said array including lines of a first and a second direction; distortion-imposing means for the elastic walls of said chambers, constituting a first group; a separate chamber unique for each of said array lines of the second direction; said separate chamber having inlet and outlet ports and elastic walls; a drive means; an independent drive means; an outlet duct; distortion-imposing means for the elastic walls of said separate chambers, constituting a second group; said distortion-imposing means for the elastic walls of the chambers in the array lines of the first direction communicating with said drive means; said outlet ports of said chambers coupled with ducts positioned in said array lines of the second direction, communicating with said inlet ports of said separate chambers which are coupled through the distortion-imposing means for their elastic walls with said independent drive means; said outlet ports of said separate chambers coupled via said outlet duct with an external apparatus.

4,250,930

READING DEVICE FOR DOBBIES OR OTHER WEAVING MECHANISM

Joseph Palau, Duingt, and Jean-Paul Froment, Doussard, both of France, assignors to Societe Anonyme des Etablissements Staubli, Faverges, France

Filed Feb. 26, 1979, Ser. No. 15,264
Claims priority, application France, Jun. 16, 1978, 78 19230
Int. Cl.[3] D03D *51/00*
U.S. Cl. 139—324 **2 Claims**



1. In a reading device for a loom dobby having double swinging levers and retaining hooks and having rotating means having radially extending lugs operative to contact and selectively actuate the retaining hooks, improved means for driving the rotating means from the dobby shaft comprising:

an input shaft coupled to said dobby shaft and having an input gear fixed thereon;

an output shaft disposed parallel to said input shaft and having an output gear fixed thereon, the output shaft carrying said rotating means fixed thereon;

an intermediate shaft disposed parallel to said input and output shafts and located between them and carrying an intermediate gear meshing with both the input gear and with the output gear;

means supporting the output shaft and including yieldable means urging the output shaft away from said retaining hooks and toward said intermediate shaft to maintain the output gear always in contact with the intermediate gear; and

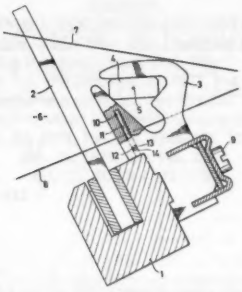
mobile support means pivotally mounted on the input shaft and supporting the intermediate shaft with the intermediate gear in mesh with the input gear, whereby the mobile support means can be tilted about the input shaft from a normal weaving position selectively to an unweaving position wherein the loom is reversed and the relative angular positions of the input and output shafts are shifted, or to a heddle frame leveling position wherein the rotating means is retracted to move the lugs fully out of contact with the hook means.

4,250,931

GUIDE FOR A WEFT-PICKING MEANS

Klaus P. Zeleny, Konstanz, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 1, 1979, Ser. No. 16,483
Int. Cl.³ D03S *51/40*
U.S. Cl. 139—341 **10 Claims**



1. In a weaving machine having a plurality of guide teeth for guiding a projectile in a picking path, a transducer mounted on at least one of said guide teeth for generating a signal in dependence on the movement of the projectile through said one guide tooth.

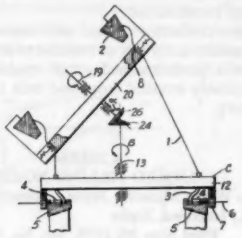
4,250,932

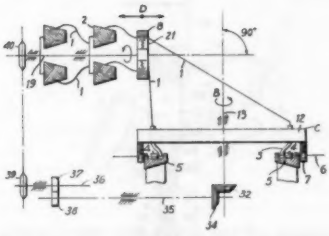
METHOD OF AND AN APPARATUS FOR SUPPLYING WEFT THREAD CARRIERS IN TRAVELLING-WAVE LOOMS

Alexandr L. Galperin, ulitsa Moldaqulovoi, 10, korpus 3, kv. 166; Eduard A. Onikov, ulitsa Panferova, 5, korpus 2, kv. 106, both of Moscow; Alexandr A. Zabotin, Belyaevo-Bogorodskoe, kvartal 45, korpus 26, kv. 85, Moscoa, and Evgeny D. Loschilin, Domodedovo, ulitsa 8 Marta, Moscovskaya oblast, all of U.S.S.R.

Continuation-in-part of Ser. No. 725,439, Sep. 22, 1976. This application Mar. 19, 1979, Ser. No. 21,590
Int. Cl.³ D03D *47/26*
U.S. Cl. 139—436 **6 Claims**

1. A method of threading weft thread onto spools of shuttles in looms with a weaving zone remote from a device for winding the weft thread onto the spools of the shuttles including the steps of: winding the thread onto shuttle spools by winding means, transporting the shuttles along a closed path from the winding means to the weaving zone with simultaneous formation of a straight portion of the thread defined between the shuttle as it reaches the weaving zone and the winding means which effected the winding of the weft thread on the spool of this shuttle; cutting the straight portion of the thread at the edge of the weaving zone so that the free end of the straight portion of the weft thread extends beyond the winding means; arranging the free end of the straight section of the weft thread on the straight line defined between the winding means and a means for braking the weft thread located between the winding means and a bobbin from which the thread is pulled; and





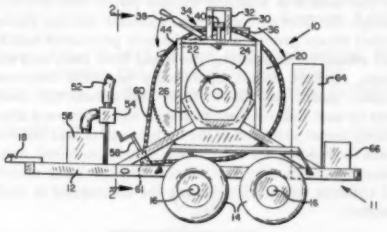
removing said free end back to the winding means for winding the free end on the shuttle spool.

4,250,933

SEDIMENT REMOVAL APPARATUS

Wayne L. Olson, P.O. Box 3957, Central Point, Oreg. 97502

Filed Feb. 5, 1979, Ser. No. 9,367
Int. Cl.³ B65B *3/04*
U.S. Cl. 141—98 **9 Claims**



1. A portable apparatus for removing sedimentary waste material from a storage location, transporting the material to a selected location, and controllably depositing the material at said selected location in a selected manner, comprising:

(a) a carriage having at least two rotatably mounted transport wheels disposed respectively on opposite sides of said carriage for supporting said carriage and transporting said apparatus, said wheels having respective axes of rotation oriented in the same predetermined direction;

(b) elongate tank means, rotatably supported by said carriage, said tank means having an axis of rotation parallel to the axes of rotation of said transport wheels and an elongate aperture formed therein extending substantially the entire length of said tank means;

(c) cover means, supported by said carriage and attachable to said tank means, for sealingly closing said aperture;

(d) pump means, connected to said cover means, for reducing the pressure within said tank means in order to draw sedimentary waste material into said tank means from a storage location; and

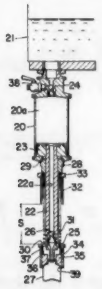
(e) means, connected to said tank means, for rotating said tank means on its axis of rotation to any selected position within a predetermined range, enabling material to be controllably emptied from said tank means through said aperture.

4,250,934

LIQUID FILLING NOZZLE

Yoshinobu Wada, Matsuto, Japan, assignor to Shibuya Kogyo Co. Ltd., Ishikawa, Japan

Filed May 30, 1979, Ser. No. 43,722
Int. Cl.³ B65B *3/12, 3/32*
U.S. Cl. 141—357 **6 Claims**



1. A liquid filling nozzle for use in liquid filling machines in which containers are filled with a predetermined amount of liquid successively, comprising cylinder means having top and bottom ends and housing a piston in a reciprocatingly movable manner, said bottom end being provided with at least one through-hole, first liquid flow control means provided at the top end of said cylinder means for controlling the supply of liquid into said cylinder means, hollow shaft means having a top end which is attached to said piston and which passes through the bottom end of said cylinder, second liquid flow control means provided at the bottom portion of said hollow shaft means for controlling the liquid flow from said cylinder means, resilient means operatively provided between said cylinder means and said hollow shaft means for exerting a force on said hollow shaft means in the downward direction, holding means provided at the bottom end of said hollow shaft means for holding the top portion of said container, and valve means hydrodynamically connected to the inner chamber of said cylinder means for releasing the air trapped in said inner chamber.

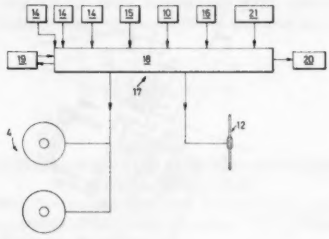
4,250,935

METHOD AND AN APPARATUS FOR CROSS-CUTTING TREES

Anders T. Helgesson, Akersberga; Gunnar B. Magnusson, Stocksund, and Johan F. Sederholm, Djursholm, all of Sweden, assignors to Svenska Traforskningsinstitutet, Stockholm, Sweden

Filed Nov. 30, 1978, Ser. No. 965,065
Claims priority, application Sweden, Dec. 5, 1977, 7713765
Int. Cl.³ B27L *1/00*
U.S. Cl. 144—2 AA **20 Claims**

1. An apparatus for cutting tree trunks to length, comprising in combination lopping means for cutting off branches from the trunks, cutting means for cutting off the trunk, advancing means for moving the trunk lengthwise past the lopping means and the cutting means, means for measuring the lengthwise movement of the tree trunk, a control unit receiving from said measuring means a length signal representing the length advance of the trunk and generating in response to length advance control signals for the advancing means and for the cutting means, at least one transducer that measures the cutting force applied by the lopping means to cut off the branch or the branches momentarily engaging the lopping means, said transducer generating a lopping force signal representative of that



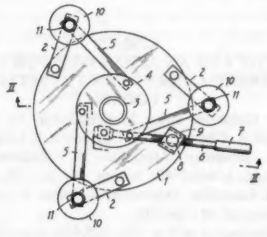
cutting force, said control unit having an input for the lopping force signal and combining said lopping force signal with the length signal into at least one knot signal representing the presence of knots on the tree trunk, said control unit transmitting said control signals to the advancing means and to the cutting means as a function of the knot signal thereby to cut off the trunk at locations that are well chosen relative to the locations of the Knots.

4,250,936

RADIALLY ADJUSTABLE SUPPORT AND CLAMP FOR MOTORCYCLE WHEEL RIM

Francis du Quesne, 138, Cleistraat, 2630 Aartselaar, Belgium

Filed Oct. 31, 1978, Ser. No. 956,155
Claims priority, application Belgium, Nov. 3, 1977, 256391
Int. Cl.³ B60C *25/06*
U.S. Cl. 157—17 **4 Claims**



1. A device, for clamping a motorcycle wheel having spokes and a rim, comprising:

(i) a baseplate adapted to be clamped between the jaws of a turntable of an apparatus for fitting and removal of a tire,

(ii) a plurality of arms each pivotably mounted on said baseplate such that a free end portion of each arm is movable radially inwardly and outwardly with respect to the center of the baseplate,

(iii) a respective wheel carrier on said free end portion of each arm,

(iv) a respective clamping stud extending axially from said free end portion of each arm, to engage between the spokes of the motorcycle wheel and abut against the internal periphery of the rim of the wheel,

(v) an element mounted on the baseplate for rotation about the center thereof

(vi) a respective link connected to said element and to the free end portion of each arm,

(vii) a shifting means coupled to the baseplate and to said rotatable element for rotating said element to pivot said arms in unison and for locking said element in a selected position in which the clamping studs are engaged formly against the internal periphery of the wheel rim.

4,250,937

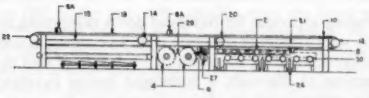
SAWMILL LOG HANDLING METHOD

Robert K. Detjen, Eau Claire, Wis., assignor to McDonough Manufacturing Company, Eau Claire, Wis.

Division of Ser. No. 805,553, Jun. 10, 1977, Pat. No. 4,152,960, and a continuation-in-part of Ser. No. 772,152, Feb. 25, 1977, Pat. No. 4,146,072, which is a continuation-in-part of Ser. No. 556,836, Mar. 10, 1975, Pat. No. 4,009,632. This application Jan. 11, 1979, Ser. No. 2,921

Int. Cl.³ B27B *1/00, 7/00*

U.S. Cl. 144—312 **6 Claims**



1. A sawmill log handling method for advancing logs along a machine axis from an infeed side of a saw, through the saw and to an outfeed side of the saw, said method comprising the steps of,

positioning the log with its longitudinal axis substantially parallel to said machine axis,

engaging a forward end of a log with a forward hold-back dog by moving the holdback dog rearwardly against the forward end of the log,

driving the log forwardly after the holdback dog is engaged therewith by imposing a forward driving force on a pusher dog engaged with the rear end of the log along said machine axis,

imposing a rearward retarding force on the holdback dog during its forward movement to clamp the log between the pusher dog and the holdback dog,

sawing the log as it is engaged by both dogs and moved forwardly along the machine axis.

4,250,938

HANDBAG

Milton I. Siegel, Scottsdale, Ariz., assignor to AMBA Marketing Systems, Inc., Tempe, Ariz.

Filed May 15, 1978, Ser. No. 905,796

Int. Cl.³ A45C *1/08, 15/00*

U.S. Cl. 150—35 **7 Claims**

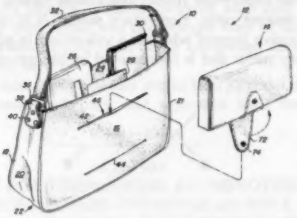
1. A clutch purse for receiving and storing cosmetic items of the type generally contained in cylindrical containers and cooperable with a main handbag having exterior fastening means therein; said purse comprising:

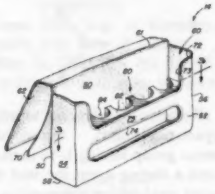
(a) a body having front, rear, end and bottom panels defining a compartment therebetween, said rear panel having an upper horizontal edge,

(b) a closure flap having dimensions generally corresponding to the dimension of the front panel and hingedly secured to said purse rear panel along said upper horizontal edge, said closure flap having a first closed position substantially overlying said front panel and a second open position with the flap reversely folded adjacent and spaced from said rear panel;

(c) second flap means dimensioned generally corresponding to the dimensions of said rear panel and hingedly secured to said rear panel along said upper horizontal edge, said second flap receivable in said exterior fastening means for selectively attaching or detaching said purse to said handbag;

(d) tab means secured to said second flap means, said tab having means for securement to said closure flap whereby said tab can be secured to said closure flap in said second closure flap position to form a brace to position said purse in a free-standing position and whereby said tab means can





be secured to said closure flap in said first position to close said purse; and

(e) organizer means in said purse compartment comprising a plurality of retention channels for the orderly containment of personal items such as generally cylindrical cosmetic containers; said front panel defining an opening to provide the user with a view of at least a portion of said containers.

4,250,939

SUPER RIGID RUBBER COMPOSITION AND A TIRE USING THE SAME

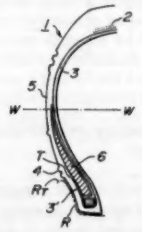
Shoson Shibata, Tokyo; Akio Sato, Higashi-Murayama; Yoshihiro Hayakawa, Akigawa, and Fumio Bamba, Mitaka, all of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Division of Ser. No. 812,073, Jul. 1, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,815

Claims priority, application Japan, Jul. 1, 1976, 51/77075

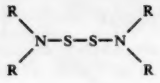
Int. Cl.³ B60C *15/06*

U.S. Cl. 152—362 R **8 Claims**



1. In a radial tire comprising a carcass ply having reinforcing cords arranged at an angle about 90° to the equatorial plane of the tire, both ends of the carcass ply being wound about bead wires to form turned-up portions and being secured to bead portions, the improvement wherein the radial tire has an improved ride feeling and comprises a vulcanized super rigid

rubber composition having a dynamic modulus of 500 to 1,500 kg/cm^2 arranged in a space formed between the carcass ply and the turned-up portion thereof and forming a bead filler rubber directed towards the sidewall of the tire wherein the super rigid rubber composition is produced from a composition comprising a sulfur-vulcanizable rubber selected from the group consisting of natural rubber, a diene series rubber, a diene series copolymer rubber and rubber blends thereof in an optional mixing ratio, elementary sulfur, N,N'-dithiodiamine or a derivative thereof which is a vulcanizer in addition to the elementary sulfur and is represented by the general formula



wherein

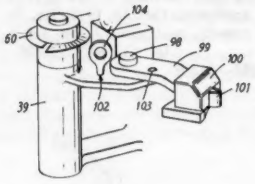
represents an alkylamino, arylamino, aryalkylamino, cycloalkylamino, cyanoalkylamino, cyanocycloalkylamino or heterocycloamino group having 1–16 carbon atoms, a thermosetting resin and a curing agent for said thermosetting resin, wherein the super rigid rubber composition is produced from a composition comprising 0.1–8 parts by weight of said N,N-'dithiodiamine or a derivative thereof, 5–30 parts by weight of said thermosetting resin and 0.5–5 parts by weight of said curing agent, based on 100 parts by weight of said rubber.

4,250,940

TIRE TREAD CUTTING MACHINE

Kenneth D. Curry, P.O. Box 1856, Hattiesburg, Miss. 39401

Continuation-in-part of Ser. No. 851,966, Nov. 16, 1977, Pat. No. 4,144,923. This application Oct. 25, 1978, Ser. No. 954,726
The portion of the term of this patent subsequent to Mar. 20, 1996, has been disclaimed.
Int. Cl.^{3} B29H *21/08*
U.S. Cl. 157—13 **5 Claims**



1. A machine, for cutting circumferential grooves in a tire tread, which comprises:

(i) a support;

(ii) means on said support for supporting a tire rotatable about an axis, said means comprising a shaft having a hub to receive the tire, and means on said support releasably locking said shaft in an operative position on said support;

(iii) a mounting carried by said support, said mounting and said tire support means being movable relatively towards and away from each other radially of said axis;

(iv) a cutter on said mounting;

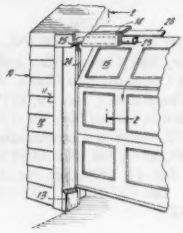
(v) drive means to act between said support and said tire for rotating said tire relative to the cutter.

4,250,941

AUTOMATIC SEALING APPARATUS FOR OVERHEAD DOORS

John P. McNally, 14 Zanoni St., Woodcliff Lake, N.J. 07675

Filed Aug. 31, 1979, Ser. No. 71,664
Int. Cl.^{3} E05D *15/00*
U.S. Cl. 160—209 **8 Claims**



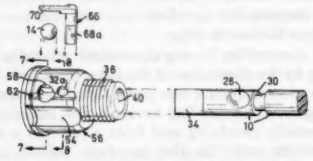
1. Sealing apparatus for overhead doors comprising in combination with a building structure wall, an opening in said wall, spaced vertical casing members on each side of said opening and secured to the wall, a horizontal header overlying the casing members in the opening and secured to the casing members and the wall, elongated, spaced track members secured at each side of the opening to the wall said track members being somewhat channel shaped in cross section and having a vertically disposed portion, a horizontally disposed top portion and a curved portion between the said vertical and horizontal portions, a door received within the opening and peripherally overlying a portion of the casing members and the header, rollers carried by the door in operative engagement with each of the track members to lead the door from a vertical, closed position, to an overhead, horizontal, open position, an elongated elastomeric hollow reservoir secured to the header and extending across the inside surface thereof, spaced elongated elastomeric tubular seal members vertically disposed on each side of the opening adjacent the door, a fluid line to connect the interior of each of the tubular seal members with the interior of the reservoir, a quantity of fluid internally carried by the said reservoir and the tubular seal members, and an elongated bar secured to the top of the door and disposed so as to compress the tubular reservoir when the door is in its closed position.

4,250,942

CLUTCH MECHANISM

Heinz W. Dreher, Box 109, S-782 00 Malung, Sweden, and Bo S. O. Persson, Bräkne-Hoby, Sweden, assignors to Heinz Walter Dreher, Sweden

Filed Jun. 30, 1978, Ser. No. 921,104
Claims priority, application Sweden, Jun. 30, 1977, 7707590
Int. Cl.^{3} E06B *9/208*
U.S. Cl. 160—297 **1 Claim**



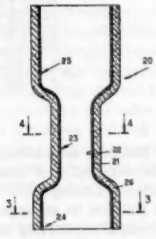
1. A clutch mechanism in a spring motor for a tubular roller-blind rod or the like, comprising a ball clutch having a hub or outer clutch member to be secured non-rotationally in one end

of the tube and provided with a number of channels for clutch balls adapted, upon predetermined driving conditions, to engage a ball-receiving recess in an inner clutch member which at one end has a coaxial outer non-cylindrical journal pin to be held rotationally stationary upon use, the inner clutch member being non-rotationally connected at its other end with a coaxial shaft surrounded by a helical torsion motor spring having one end secured to the shaft and its other end secured to the hub, so that rotation of the rod in the rolling-off direction in relation to the stationary inner clutch member will occur against the action of the spring, characterised in that the shaft (10) and the journal pin (34) are an integral one-piece member of plastics such as nylon, that the inner clutch member comprises a cylindrical portion (24) of the shaft and is provided with said recess (26,28), that the hub (12,56) is made in one piece of plastics such as nylon and has a cylindrical bore (40) enabling the hub to be inserted over the journal pin (34) to its operating position on said shaft portion (24), that said shaft portion (24) has an annular groove (30) receiving a portion of a locking pin (16,66*a*) inserted into the hub in a transverse pin channel (32,32*a*), and that the hub has a number of straight ball channels (42,44,46;58,60) extending in a radial plane from the outer circumference of the hub in a non-radial direction and so that the bore (40) of the hub will partially cross the inner end of each ball channel and cut away a corner portion to leave an opening (48;61) for admitting a portion of the ball in the respective channel to enter said recess (26), the locking pin (66) being at its outer end extended with a stop arm (70) at right angles to the locking pin and located in an axial groove (62,64) in the outer surface of the hub, said stop arm crossing the opening formed by the outer end of the adjacent ball channel (58,60) so that the stop arm will retain the ball in the channel when the hub is not mounted in a roller tube.

4,250,943
METHOD OF MANUFACTURING OF A METALLURGICAL MOULD

Maurice Rabinovitch, Chatillon, and Pierre Magnier, Chatenay-Malabry, both of France, assignors to Office National d'Etudes et de Recherches Aerospatiales, Chatillon and Microfusion S.A., Gennevilliers, both of, France

Continuation of Ser. No. 659,014, Feb. 18, 1976, Pat. No. 4,147,201. This application Sep. 21, 1978, Ser. No. 944,568
Claims priority, application France, Feb. 20, 1975, 75 05345
The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.
Int. Cl.³ B22C 9/04, 7/02
U.S. Cl. 164—35 **1 Claim**



1. A method of manufacturing a mold for the directional solidification of a metal alloy composite to produce a part of complex shape of refractory directionally solidified polyvariant fiber-reinforced composite, said mold consisting of a one-piece shell made of a refractory metal oxide having a purity of at least 99.5% and selected from the group which consists of aluminum oxide, zirconium oxide, and magnesium oxide, having a porosity of at most 10%, a smooth inner face and a thickness comprised between 0.5 and 1 mm, said method comprising the steps of:

preparing a model of a part to be produced by forming a wax shape of the part to be produced, chemically applying a silver film to said wax shape and electrolytically depositing a metal forming an external surface of said model on said silver film, said external surface having a melting point sufficiently high to resist deposit by plasma or flame spraying of a refractory metal oxide selected from the group which consists of aluminum oxide, zirconium oxide and magnesium oxide having a purity of at least 99.5%;

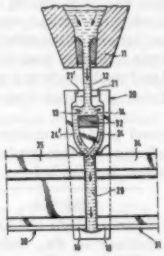
depositing by plasma or flame spraying onto said model a one-piece thin, dense and non-porous shell of said oxide, the thickness of said shell being comprised between 0.5 and 1 mm; and

separating said shell from said model by a physical or chemical treatment whereby said separated shell forms said mold.

4,250,944
PROCESS FOR PERFORMING ALUMINOTHERMIC RAIL CONNECTION WELDINGS AS WELL AS MULTIPART CASTING MOLD FOR PERFORMING THE PROCESS

Wilfried Möring, Essen, Fed. Rep. of Germany, assignor to Elektrothermit GmbH, Fed. Rep. of Germany

Filed May 29, 1979, Ser. No. 43,498
Claims priority, application Fed. Rep. of Germany, Jun. 8, 1978, 2825139
Int. Cl.³ B22D 23/00, 19/04
U.S. Cl. 164—54 **3 Claims**



1. In the process for performing aluminothermic rail connection weldings, in which the rail ends to be welded together and being laid with a gap are enclosed with a fireproof, prefabricated casting mold producing a weld reinforcement covering the gap, and aluminothermically-produced steel is poured into the casting mold cavity,

the improvement comprising pouring the steel melt into the casting mold in the form of at least two separate casting streams positioned opposite each other in the longitudinal rail direction, whereby the casting streams are so guided that they will intermix approximately in the area of the rail head center of the two rails to be welded together.

2. In a multipart casting mold for performing aluminothermic rail connection weldings in which the assembled mold forms a casting pot over a pair of rail ends to be welded, said casting pot terminating in a casting mold cavity which encloses said rail ends and the inner walls of said mold cavity defining weld reinforcements, said casting mold cavity in the rail foot area being in connection with riser channels for receiving excess steel melt, and a bar adapted to be positioned on shoulders in said casting pot,

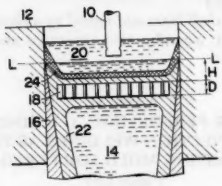
the improvement comprising casting channel means in opposite walls of said casting pot in the longitudinal rail direction, said channel means deviating from the vertical and toward each other in a manner such that streams of molten metal guided in said channels will impinge upon each other and intermix approximately in the area of the rail head center of said rail ends to be welded, and

means whereby said casting mold cavity is in connection with said riser channels only in the rail foot area.

4,250,945
METHOD OF SEQUENTIAL CONTINUOUS-CASTING OF DIFFERENT GRADES OF STEEL

Takao Koshikawa; Tunehiro Ueda, and Katsuji Fukushima, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 19, 1979, Ser. No. 49,881
Claims priority, application Japan, Jun. 20, 1978, 53-75031
Int. Cl.³ B22D 11/00
U.S. Cl. 164—86 8 Claims



1. A method of sequential continuous-casting wherein continuous casting of a first grade of molten steel is changed over to continuous casting of a second grade of molten steel different in constituent from the first grade of molten steel, comprising the steps of:

stopping the pouring of the first grade of molten steel into a mold;

immersing a steel structure having a plurality of vacant spaces for allowing the molten steel in said mold to pass vertically therethrough in the substantially center portion of the first grade of molten steel in said mold;

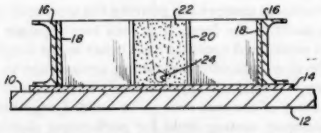
forming around said steel structure a solidified layer merging in a solidified shell developed from the wall of said mold; and

pouring the second grade of molten steel into said mold before the surface of the first grade of molten steel above said steel structure is solidified.

4,250,946
METHOD FOR PRODUCING INGOT MOLD STOOLS

Louis A. Monta, Monroeville, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 883,028, Mar. 3, 1978, abandoned. This application Jul. 12, 1979, Ser. No. 57,044
Int. Cl.³ B22C 1/00
U.S. Cl. 164—137 5 Claims



1. A method for producing ingot mold stools having smooth flat as cast surfaces and characterized by a microstructure as cast which will provide a longer useful life than stools produced in conventional sand molds; the steps comprising, placing a first flat thermal-insulative board of compressed fibrous silica-alumina onto a flat, horizontal, heat resistant surface, placing a rigid molding flask over said first insulative board such that the molding flask holds said first insulative board in place and provides a peripheral seal at the interface, lining the inside surfaces of said molding flask with vertically disposed thermal-insulative boards of compressed fibrous silica-alumina, casting molten iron into the cavity defined by the first horizontal thermal-insulative board and the vertical thermal-insulative boards thereover, allowing said cast iron to cool and solidify slowly due to the thermal-insulative nature of the cavity and removing the iron casting from the thermal-insulative board mold.

4,250,947
GAS CONCRETE MOLD RUNNER AND METHOD OF USE

Per Jakobsson, and Ingemar Larsson, both of Örebro, Sweden, assignors to Intong Aktiebolag, Kumla, Sweden

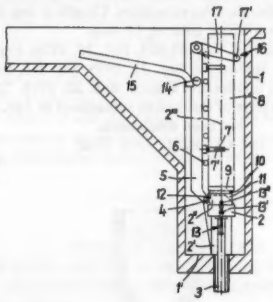
Filed Apr. 20, 1978, Ser. No. 898,167
Claims priority, application Sweden, Apr. 28, 1977, 7704889
Int. Cl.³ B22C 1/02, 9/08
U.S. Cl. 164—138 5 Claims

1. In a method for casting molten metallic materials through runners in the form of casting gates, flowing-through tubes, feeders, rising gates and the like, the improvement wherein the molten materials are cast using at least one runner defined by a body fabricated of gas concrete having a moisture content of 3 to 30% by weight, the surface of said body immediately surrounding said runner sintering in response to the temperature which occurs during passage of the molten metallic materials throught the runner and the fluid present in the pores of the gas concrete body vaporizing and passing outwardly through the body from said surface so as to provide cooling of the walls of said body, the density of said gas concrete body being in the range of from 400 to 600 kg/m³.

4,250,948
DEVICE FOR HANDLING CONTINUOUSLY VERTICALLY CAST RECTANGULAR STRANDS, ESPECIALLY OF ALUMINUM AND ALUMINUM ALLOYS

Franz-Peter Feuchter, Oberhausen; Erling Roller, Essen, and Klaus-Walter Giertz, Bochum, all of Fed. Rep. of Germany, assignors to Fried. Krupp Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,609
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1978, 2801972
Int. Cl.³ B22D 11/128, 45/00
U.S. Cl. 164—269 11 Claims



1. A device for handling semi-continuously vertically cast rectangular strands, especially of aluminum and aluminum alloys which includes: a casting table vertically reciprocable from a lower first position to an upper second position and vice versa, a longitudinal supporting member *having a strand supporting surface and being* pivotally connected to said casting table, means arranged for cooperation with said supporting member *to support and guide said support mechanisms at various positions,* said casting table being operable in said first position in cooperation with said last mentioned means to hold said supporting member in at least nearly vertical position and to support a vertically cast rectangular strand in upright position with its narrow side in engagement with said supporting member, holding means operatively connected to said supporting member for holding there against a cast strand engaging said supporting member in said first position of said casting table, said casting table also being operable when being moved

from said first position into said second position to pivot said supporting member into an at least nearly horizontal position, dummy bars [(Anfahrstücke)] for supporting an end face of a strand, a common base plate having said dummy bars connected thereto and forming an exchangeable unit, a table plate forming part of said casting table and having said *exchangeable* unit fitted therein, said table plate being pivotally connected to said casting table for pivoting about an axis eccentrically arranged with regard to the longitudinal plane of symmetry of said casting table, and an arresting device operatively connected to said table plate for non-movably connecting said base plate to said casting table.

4,250,949

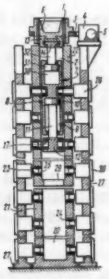
SEMICONTINUOUS CASTING APPARATUS

Mikhail Y. Brovman, ulitsa N. Kurchenko, 12, kv. 22; Ivan K. Marchenko, ulitsa Lenina, 6, kv. 94; Nikolai M. Kozy, ulitsa Shkadinova 72a, kv. 58, all of Kramatorsk; Viktor A. Efimov, ulitsa Vladimirskaya 51/53, kv. 88, and Richard Y. Yakobshe, ulitsa Kablukova 11, kv. 36, both of Kiev, all of U.S.S.R.

Filed Mar. 12, 1979, Ser. No. 19,746

Int. Cl.³ B22D *11/08, 11/128*

U.S. Cl. 164—425 **1 Claim**



1. An apparatus for semicontinuous casting of metal comprising stationary mounted legs; a secondary-cooling chamber disposed intermediate said stationary mounted legs; a mould positioned above said secondary-cooling chamber; a dummy bar positioned within said secondary-cooling chamber and having a thickened portion and a body, the body of said dummy bar including a hydraulic cylinder to withdraw a casting from said mould and mounted to move lengthwise of said secondary-cooling chamber, said hydraulic cylinder having a first chamber which accommodates a first piston and rod assembly formed with said thickened portion and including an additional chamber arranged lengthwise of said secondary-cooling chamber and accommodating a second postion and rod assembly, the second piston stroke thereof being two times less than that of the first piston stroke; and index pins longitudinally movable by means of actuators, secured on said stationary mounted legs and extending through openings in walls of said secondary-cooling chamber and cooperating with holes fitted in lateral sides of the thickened portion and the body of said dummy bar.

4,250,950

MOULD WITH ROUGHENED SURFACE FOR CASTING METALS

Kurt Buxmann; Martin Bolliger, both of Sierre, and Ivan Gyöngyös, Männedorf, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

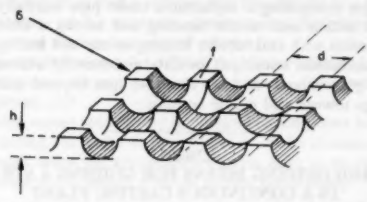
Filed Oct. 25, 1979, Ser. No. 88,117

Claims priority, application Switzerland, Nov. 3, 1978, 11328/78; Fed. Rep. of Germany, Dec. 28, 1978, 2856472

Int. Cl.³ B22D *11/06, 7/06*

U.S. Cl. 164—430 **9 Claims**

1. A casting system for casting molten metal into a mold comprising a source of molten metal and a casting mold, said casting mold having a roughened surface comprising a uniform array of projections in the shape of a frustum of a pyramid such that said molten metal on initial contact with said mold contacts only top surfaces of said array of frustums which constitute high points of said roughened surface thereby forming an air gap between said molten metal and low points of said



roughened mold surface wherein said low points of said roughened mold surface are interconnected so that gases in said air gap escape therefrom parallel to said mold surface thereby preventing the melt from rising from said mold surface wherein said projections are spaced apart a distance d of about 0.05 mm to 1 mm and the area of the top surface f of said projections is about $0.05\ d^2 < f < 0.5\ d^2$.

4,250,951

DEVICE FOR SPRAYING OF A COOLANT ON STEEL PLATES DURING CONTINUOUS CASTING

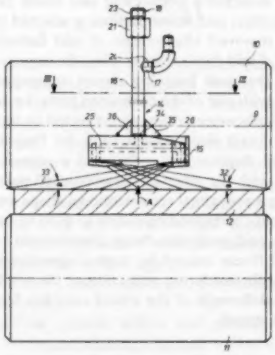
Sepp Mezger, Eningen; Werner Christner, Hohenstein-Odenwaldstetten; Hans Schrewe, Düsseldorf; Fritz-Peter Pleschiutschnigg, Dortmund, and Kurt Lerch, Düsseldorf, all of Fed. Rep. of Germany, assignors to Lechler GmbH & Co. KG, Fellbach and Mannesmann AG, Düsseldorf, both of, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,433

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1978, 2816441

Int. Cl.³ B22D *11/124*

U.S. Cl. 164—444 **5 Claims**



1. A device for spraying a coolant-propellant onto steel plates emerging from a continuous casting mold and supported by two pairs of support rolls, comprising a nozzle housing positioned between said pairs of support rolls on one side of the steel plate, a mixing chamber detachably connected to said nozzle housing and having separate inlet passages for a coolant and a propellant and an outlet passage in fluid communication with said nozzle housing, said nozzle housing having a pair of fluid discharge nozzles, said nozzles being arranged in offset side-by-side relationship and oppositely directed and so config-

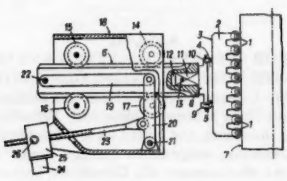
ured that the coolant-propellant mixture impacts on the surface of the steel plate in wide dispersion and at an acute angle thereto, said nozzle housing further including guiding means for dividing the incoming coolant-propellant mixture into separate streams and for directing said streams to said nozzles, said mixing chamber comprising an elongated tubular housing connected to said nozzle housing and having one of said inlet passages entering radially therein, and the other of said inlet passages comprising a replaceable insert pipe coaxially positioned within said tubular housing and having a fluid tight connection with said tubular housing at one end and opening into said tubular housing at the distal end therefor wherein said insert pipe extends at least about 48 mm beyond said inlet passage toward said nozzle housing.

4,250,952

STRAND GUIDING MEANS FOR GUIDING A STRAND IN A CONTINUOUS CASTING PLANT

Alois Scheinecker; Werner Scheurecker, and Reinhard Hargassner, all of Linz, Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jul. 23, 1979, Ser. No. 59,513
Claims priority, application Austria, Aug. 4, 1978, 5668/78
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—448 **6 Claims**



1. In a strand guiding means for guiding a strand in a continuous casting plant, of the type including a displacement ruler, an adjustment means for displacing said displacement ruler, a frame part, supporting elements mounted on said frame part and adjustable to one side face of said strand, and fastening means for detachably connecting said frame part to said displacement ruler, said frame part being adapted to be vertically upwardly removed after release of said fastening means and retraction of said displacement ruler, the improvement characterized in that said fastening means comprises a projection associated with one of the connected parts, i.e. said frame part and said displacement ruler, and directed in the displacement direction of said displacement ruler for fastening said frame part to said displacement ruler, and a corresponding recess associated with the other of the connected parts, said projection having a polygonal cross-sectional shape and being insertable into said corresponding recess so as to be supported on all of its sides, said projection being dimensioned so as to be able to transmit forces caused by normal operations and to withstand shear forces during retraction of the displacement ruler after a breakthrough of the strand core has frozen the frame part to the strand.

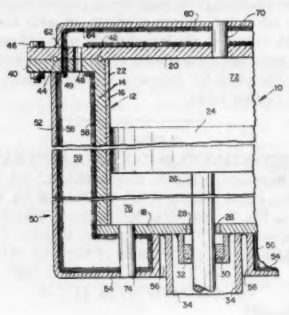
4,250,953

PISTON SEALING

Vannevar Bush, Belmont, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 623,108, Oct. 16, 1975, abandoned, which is a continuation of Ser. No. 78,902, Oct. 7, 1970, abandoned. This application Aug. 12, 1977, Ser. No. 824,189
Int. Cl.³ F28D *15/00*
U.S. Cl. 165—1 **1 Claim**

1. The expansible chamber apparatus method of uniform temperature control on an external surface of an expansible chamber cylinder comprising placing an enclosure around the cylinder, providing capillary material within the enclosure and including a fluid within the enclosure having a vaporization point at about the operating temperature of the expansible



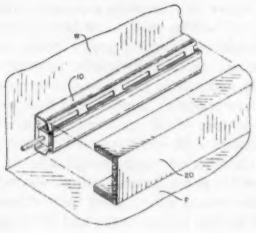
chamber cylinder, evaporating the fluid at relatively hot wall portions, condensing fluid at the relatively less hot wall portions, flowing vapor from the hotter to less hot portions through open space within the enclosure, and flowing liquid from the less hot to the hotter portions through capillary material in the enclosure.

4,250,954

HEAT CONTROL MEMBER AND METHOD

George W. Remlinger, 8 Wendy Rd., Greenfields, and Arthur K. Kreider, 12 Jeffrey Rd., Greenfields, both of Reading, Pa. 19601

Filed Sep. 13, 1979, Ser. No. 75,105
Int. Cl.³ F28F *13/06*
U.S. Cl. 165—1 **5 Claims**



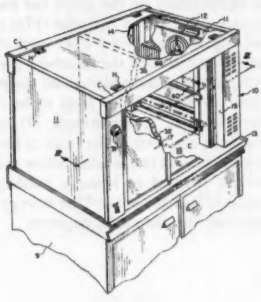
1. A method for conserving heat energy by controlling heat flow from a previously installed system of hot water baseboard heating units that includes a multiplicity of heating elements enclosed in housings provided with ports for permitting air flow in proximity to the heating elements, comprising removably installing a cover over at least part of said heating units thereby to decrease the amount of heat lost from the hot water flowing through said units, said cover comprising a substantially fluid-impervious shell member having a cross section shaped to be disposed over the heating unit, said shell member including a face portion adapted to extend over the front surface of the heating unit, a top wall contiguous with one edge of the face portion and extending angularly with respect to the face portion and a bottom wall, contiguous with another edge of the face portion and extending angularly with respect thereto.

4,250,955

SELF-SERVICE REPLENISHABLE FOOD CABINET

Robert F. Plattner, Spring Lake; Raymond J. Arend, and John A. Verberkmoes, both of Grand Haven, all of Mich., assignors to Bastian Blessing Co. Inc., Grand Haven, Mich.

Filed Jul. 7, 1978, Ser. No. 922,745
Int. Cl.[3] F25B 29/00
U.S. Cl. 165—14 8 Claims



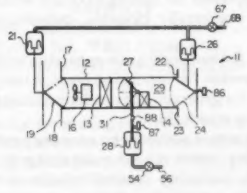
1. In a food storage cabinet defining a compartment for storing and displaying food products at a predetermined temperature other than the ambient temperature outside said cabinet, the cabinet having door means movable between a closed and open position to provide access to said compartment, heat exchange means within said cabinet, temperature control means for controlling said heat exchange means to maintain said predetermined temperature in said compartment with said door means in the closed position, air circulation means operative when said door means is in the closed position to circulate air in a path in heat exchange relation with said heat exchange means and compartment, and means operative upon the movement of said door means away from said closed position to terminate the operation of said air circulation means and temperature control means and cause said heat exchange means to augment the temperature differential between said heat exchange means and said compartment during the period when said door means remains away from the closed position.

4,250,956

VEHICLE AIR CONDITIONING APPARATUS

Masami Ohtani, Higashi Matsuyama, Japan, assignor to Diesel Kiki Company, Ltd., Tokyo, Japan

Filed Sep. 14, 1979, Ser. No. 75,482
Claims priority, application Japan, Sep. 29, 1978, 53-119990
Int. Cl.[3] G05D 23/00; B60H 3/04; F25B 29/00
U.S. Cl. 165—36 8 Claims



1. An air conditioning apparatus including an air flow duct formed with an outside air inlet, an inside air inlet, an upper cool air outlet and a lower hot air outlet, an inlet blocking door for blocking one of the outside and inside air inlets, a blower for forcing air through the duct, heating means for heating air in the duct, a temperature control door disposed in the duct for controlling air flow through a cooling means, cooling means for cooling air in the duct, an outlet blocking door for blocking one of the upper cool and lower hot air outlets, temperature sensor means and actuator means for positioning the temperature control door in accordance with an outlet of the temperature sensor means, characterized by comprising:

resistance means comprising a resistance element and a slider movable along the resistance element, the slider being connected to the temperature control door for integral movement in such a manner that the slider is in a central position on the resistance element when the temperature control door is in a central position;

blower drive means for driving the blower with an amount of power corresponding to a resistance of the resistance means; and

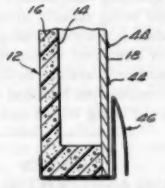
switch means actuated by the outlet blocking door for connecting the slider to opposite ends of the resistance element when the temperature control door is on opposite sides of the central position thereof respectively.

4,250,957

HEATING AND COOLING APPARATUS FOR A BUILDING

William D. McClendon, 10419 Ferngien Ave., Tujunga, Calif. 91402

Filed Nov. 1, 1979, Ser. No. 90,266
Int. Cl.[3] F24J 3/02; F24H 9/14
U.S. Cl. 165—45 5 Claims



1. In combination with a building, said building being mounted on the ground, said building having an enclosed interior, said interior being enclosed by a side wall assembly, said side wall assembly to include:

a panel assembly located within said interior, said panel assembly comprising at least one substantially planar panel having an enlarged exterior surface area, said panel being completely enclosed and having an inner chamber, said panel having a top and a bottom, said panel being constructed of a heat conductive material, said inner chamber being adapted to contain a liquid;

a liquid inlet formed within said panel, a liquid outlet formed within said panel;

a liquid reservoir located within said ground, said liquid reservoir having a wall structure, said wall structure being heat conductive to thereby cause liquid located within said liquid reservoir to assume substantially the same temperature as said ground; p1 pump means located between said liquid reservoir and said panel, said pump means to move a liquid from said liquid reservoir through said inlet into said panel, liquid within said panel to be conducted through said outlet and back to said liquid reservoir; and

said panel including a condensate collector located adjacent said bottom, said condensate collector to collect condensate which forms on the exterior surface of said panel.

4,250,958

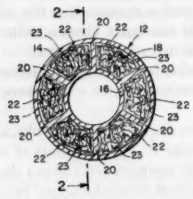
DOUBLE TUBULAR THERMAL ENERGY STORAGE ELEMENT

Kurt J. Wasserman, P.O. Box 77, Port Jervis, N.Y. 12771

Filed Jul. 16, 1979, Ser. No. 57,552

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—46 **8 Claims**



6. A thermal energy storage and transfer apparatus comprising:

an elongated tubular container, said container comprising thermally conductive flexible inner and outer tubes defining an annular space therebetween, and spacer means for maintaining said inner and outer tubes in substantially coaxial relationship;

a phase change material consisting essentially of salt hydrate having a heat of fusion of more than 50 BTU per pound and a melting point ranging between 40 and 120 degrees Fahrenheit within said annular space; and

sealing means sealing said annular space at opposite ends of said container, said inner tube providing a conduit for running heat transferring fluid through said container in thermal contact with said phase change material;

said spacer means comprising a plurality of angularly spaced apart webs spanning substantially the entire length of said container and being radially directed between the inner and outer tubes, said webs dividing said annular space into a plurality of elongated angularly spaced apart cavities, said webs and said sealing means being configured to prevent communication between said cavities, said phase change material being within said cavities.

4,250,959

COOLING AND COOKING APPARATUS

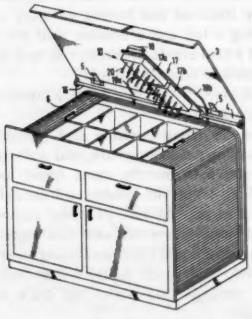
Ratko Spasojevic, Sandbergerstrasse 36, D-7000 Stuttgart 1, Fed. Rep. of Germany

Filed Apr. 2, 1979, Ser. No. 25,759

Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851918

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—61 **4 Claims**



1. A cooling and cooking device, comprising

a chest (**1**), having an opening at the top to be covered, and a roller blind (**6**) and a hinged lid (**3**) for selectively covering said opening;

a working compartment, accessible from above (**7**), for the accommodation of containers (**8**) for the food to be cooked;

a horizontal guide bar (**16**), attached to an upper rear part of the casing above the working compartment;

a steam rod support structure (**17**) with several steam-jet pipes, and means for sliding said steam-jet pipe support structure horizontally on the guide bar and for pivoting said structure vertically, a chamber (**17***a*) connected to a source of superheated steam (**14**), said chamber being connected to one end of the steam-jet pipes, and steam nozzles (**21**) at the outlet ends of said steam-jet pipes;

a storage compartment (**9**) for food to be frozen located below the working compartment (**7**) and accessible through at least one door at the front of the chest, and an engine compartment (**11**), located below the storage compartment and adapted to house a cooling system, and cooling coils (**12**) in the area of the storage compartment for connection with the cooling system.

4,250,960

CHEMICAL CUTTING APPARATUS

Edmond D. Chammas, Houston, Tex., assignor to Weatherford/DMC, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 953,141, Oct. 20, 1978, Pat. No. 4,180,131, which is a continuation-in-part of Ser. No. 830,511, Sep. 6, 1977, Pat. No. 4,125,161. This application Dec. 19, 1979, Ser. No. 105,162

Claims priority, application United Kingdom, Apr. 18, 1977, 16064/77

Int. Cl.³ E21B *29/02*

U.S. Cl. 166—55 **8 Claims**

1. In an apparatus for cutting an object within an earth bore, comprising a generally elongate, cylindrical structure that includes,

(a) means for suspending the apparatus within the bore,

(b) firing means for producing ignition temperatures,

(c) means for generating gas under pressure by ignition from the firing means (b),

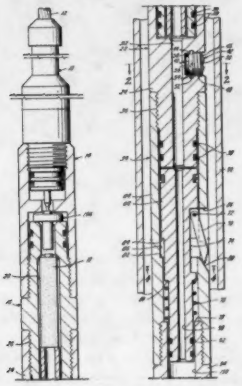
(d) anchor means activated by pressure produced by the gas generating means (c) for maintaining the apparatus substantially stationary in axial relation to the earth bore, during the cutting operation,

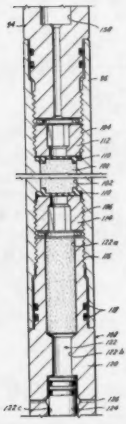
(e) chemical means releasably contained within the apparatus for incendiary cutting of the object within the earth bore upon release of said chemical means,

(f) discharge means for directing the chemical means (e) toward the object to be cut within the earth bore, the improvement comprising,

(g) pressure relief means intermediate the gas generating means (c) and the chemical means (e) for diverting a

portion of said gas exteriorly of the cylindrical structure ahead of and away from the chemical means (e) so as to





reduce the likelihood of release of the chemical means (e) in the event said apparatus is mishandled or malfunctions.

4,250,961

OIL RECOVERY METHOD UTILIZING A SURFACTANT SLUG DRIVEN BY WATER OF A CONTROLLED SALINITY

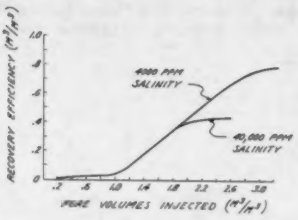
Everett W. Morse, and Abdus Satter, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Apr. 23, 1979, Ser. No. 32,429
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—252 **7 Claims**

1. In a process for recovering petroleum from a subterranean reservoir wherein the reservoir is penetrated by at least one injection well and at least one production well, said wells being in fluid communication with each other, which comprises injecting a surfactant-containing fluid into the reservoir through said injection well, further injecting a driving agent and recovering petroleum from said production well, the improvement comprising;

a. determining the upper and lower salinity levels that the surfactant in the surfactant-containing fluid can tolerate and remain able to recover the petroleum efficiently, and,

b. preparing and injecting the driving agent at a salinity level that is between said upper and lower salinity levels, wherein the driving agent contains as a first increment a quantity of a fluid comprising water and an amount of a hydrophilic polymer sufficient to raise the viscosity of the



increment to an effective level, the volume of the increment ranging from about 0.1 to about 1.0 pore volumes of the reservoir.

4,250,962

IN SITU COMBUSTION PROCESS FOR THE RECOVERY OF LIQUID CARBONACEOUS FUELS FROM SUBTERRANEAN FORMATIONS

Ajay M. Madgavkar, Pittsburgh; Roger F. Vogel, Butler, and Harold E. Swift, Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 14, 1979, Ser. No. 103,503
Int. Cl.³ E21B *43/243*
U.S. Cl. 166—256 **17 Claims**

1. The in situ combustion process for recovering liquid hydrocarbons from subterranean formations which comprises injecting a stream of combustion air into at least one injection well leading to a combustion zone in said subterranean formation, producing liquid hydrocarbons and combustion gas from at least one production well, separating the liquid hydrocarbons from the stream of combustion gas whereby a separated stream of flue gas is obtained having a heating value between about 15 Btu/scf. (559 kJ/m^3) and about 200 Btu/scf. (7,450 kJ/m^3) and containing at least one aliphatic hydrocarbon having from one to about seven carbon atoms, passing said gas stream admixed with air for combustion in contact with at least one supported platinum oxidation catalyst having palladium incorporated therewith as a cocatalyst in at least one combustion zone at a temperature high enough to initiate and maintain combustion of said gas stream, the total amount of combustion air being sufficient to provide an air equivalence ratio between about 0.20 and about 0.90, expanding the gas stream in a gas turbine following said catalyzed combustion; and driving an air compressor with said gas turbine to compress and inject said stream of combustion air into the said subterranean combustion zone.

4,250,963

SELECTIVE PERMEABILITY REDUCTION WITH POLYMERIZABLE MONOMERS AROUND STEAM INJECTION WELLS

Patrick H. Hess, Diamond Bar, Calif., assignor to Chevron Research Company, San Francisco, Calif.

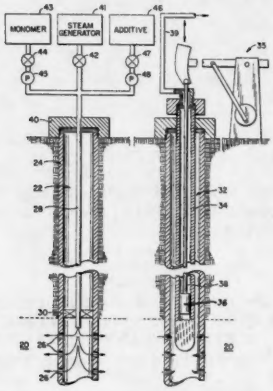
Filed Apr. 5, 1979, Ser. No. 27,537
Int. Cl.³ E21B *33/138, 43/24*
U.S. Cl. 166—288 **13 Claims**

1. A method for treating a subsurface earth formation in the neighborhood of a steam injection well to alter selectively the effective permeability of said formation, comprising the steps of:

(a) producing a vapor mixture consisting of steam and the vapor of a polymerizable monomer, said monomer in liquid state being immiscible with water, the steam being in excess so that at the pressures and temperatures of said

subsurface earth formation being treated the first condensate will consist of water only; and

(b) injecting said mixture into said subsurface earth formation being treated so that within said subsurface earth formation being treated the initial cooling of said vapor causes excess steam to condense out of said vapor, and



after further cooling said monomer will begin to condense and deposit a separate immiscible phase, whereby said condensed monomer will polymerize to become a high-viscosity polymer, thereby substantially decreasing the effective permeability of said subsurface earth formation where said polymer has been deposited.

4,250,964

PROCESS FOR RECOVERING CARBONACEOUS ORGANIC MATERIAL FROM A SUBTERRANEAN FORMATION

Douglas M. Jewell, and William G. Moon, both of Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

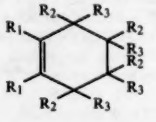
Continuation-in-part of Ser. No. 927,865, Jul. 25, 1978, abandoned. This application Nov. 15, 1979, Ser. No. 94,756

Int. Cl.³ E21B *43/22*

U.S. Cl. 166—303 **26 Claims**

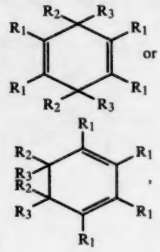
1. A process for recovering carbonaceous organic material selected from the group consisting of bitumen and heavy, viscous crude oil from a subterranean formation containing said carbonaceous organic material which comprises introducing into said formation a cycloolefinic compound selected from the following groups of compounds.

(A) cyclohexenes of the following formula:



wherein R_1 and R_2, the same or different, can be hydrogen, an alkyl having from one to five carbon atoms, a cycloalkyl having five carbon atoms, hydroxyl or a carbinol having from one to two carbon atoms, R_3 being the same as R_1 and R_2, provided at least one of said R_3 is hydrogen and that the total number of carbons in the molecule is in the range of six to eleven; and

(B) cyclohexadienes of the following formulae:



wherein R_1, R_2 and R_3 are as defined above and the total number of carbon atoms in the molecule is in the range of six to eleven, maintaining contact between said carbonaceous organic material and said cyclohexene or cyclohexadiene for a time and at a temperature sufficient to obtain carbonaceous organic material of reduced viscosity and then recovering carbonaceous organic material of reduced viscosity.

4,250,965

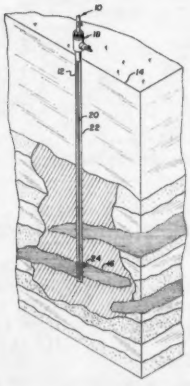
WELL TREATING METHOD

Ben W. Wiseman, Jr., P.O. Box 5394, Midland, Tex. 79701

Filed Mar. 16, 1979, Ser. No. 20,832

Int. Cl.³ E21B *36/00, 43/22, 43/27*

U.S. Cl. 166—305 R **7 Claims**



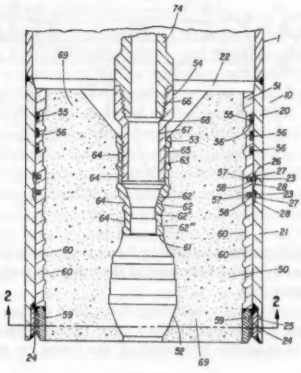
1. A method of stimulating production from an oil well capable of primary production out of an oil bearing strata, comprising the steps of: injecting an anhydrous liquid including liquid carbon dioxide down a well bore having a casing at a pressure sufficient for gaseous carbon dioxide, formed by the evaporation of the liquid carbon dioxide, to permeate through the strata and react with connate water to make carbonic acid in the strata outside the casing; and shutting in the well for a period of time sufficient to enable the carbonic acid to react with rocks in the strata to increase the permeability of the strata and thereby stimulate production from the oil well.

4,250,966

INSERTION TYPE CEMENTING BAFFLE

Steven G. Streich, and Lloyd C. Knox, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Jan. 24, 1980, Ser. No. 114,810
Int. Cl.[3] E21B *23/00, 33/14, 34/06, 43/01*
U.S. Cl. 166—328 10 Claims



1. A cementing baffle for controlling the flow of cement slurry for the cementing of a tubular member in a subterranean formation, said cementing baffle being secured to said tubular member and having said flow of cement slurry directed thereto by tubing means, said cementing baffle comprising:

annular baffle housing means having annular groove means about the interior surface thereof and having locking lug means about the interior surface on one end of said annular baffle housing means extending radially inward therefrom; and

cementing baffle member means insertable within said annular baffle housing means, said cementing baffle member means comprising:

annular baffle member means having seal means on the exterior thereof engaging the interior surface of said annular baffle housing means when said cementing baffle member means is inserted therein and having locking means on the exterior thereof engaging the groove means about the interior surface of said annular baffle housing means when said cementing baffle member means is inserted therein;

locking lug means on one end of said cementing baffle member means for engaging the locking lug means about the interior surface on one end of said annular baffle housing means when said cementing baffle member means is inserted therein;

sealing sleeve means secured within the annular baffle member means, the sealing sleeve means having a bore therethrough to allow said flow of cement slurry through said cementing baffle member means; and

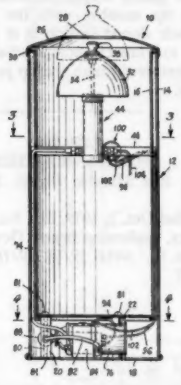
sealing adapter means adapted to be releasably connected to said tubing means and adapted to be releasably connected to the sealing sleeve means.

4,250,967

SAFETY TRASH CONTAINER HAVING A MOVABLE CLOSURE AND AN EXTINGUISHANT

Elwood R. Horwinski, Cheshire, Conn.; Joseph M. Geremia, 6313 W. Elton Ave., Las Vegas, Nev. 89107, and John Jarmie, East Haven, Conn., assignors to Joseph M. Geremia, Las Vegas, Nev.

Filed Sep. 6, 1979, Ser. No. 72,886
Int. Cl.[3] A62C *37/18*
U.S. Cl. 169—49 22 Claims



1. A safety trash-container for the disposal of cigarettes, papers and the cigars, comprising in combination:

(a) a receptacle having an opening at one end,

(b) a closure member adapted to fit said opening,

(c) means mounting the closure member within the receptacle for movement between a closed position wherein it spans the opening of the receptacle and substantially seals off the opening, and an open position wherein said opening is accessible for the deposit of said cigarettes and papers,

(d) heat responsive means disposed within the receptacle for sensing a rise in the internal temperature thereof, as a consequence of igniting of the contents thereof, and

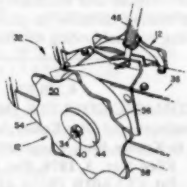
(e) powered means rendered operable by said heat responsive means, for shifting the closure member to its closed position, thereby to substantially seal off the receptacle opening and confine and smother flames resulting from a fire occuring therein.

4,250,968

MINIMUM WRAP BI-ROTATIONAL CUTTER WHEEL FOR A TILLAGE IMPLEMENT

Robert E. Fox, Minburn, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Dec. 18, 1978, Ser. No. 970,539
Int. Cl.[3] A01B *33/02, 49/06*
U.S. Cl. 172—60 9 Claims



1. For a tillage apparatus having a driven shaft member, a cutter wheel having a plurality of teeth and adapted to be

mounted on the apparatus for rotation with the shaft member for forming a furrow in the soil, the cutter wheel comprising:

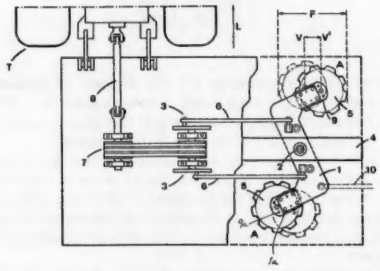
a disk member having a smoothly contoured periphery, and defining a plurality of cutting tip members spaced about the periphery, each having a radially outwardly extending rounded tip portion with leading and trailing edges, the periphery also defining a plurality of shallow outwardly arcuate gullets spaced between the tip members, the arcuate gullets having a radius of curvature greater than the radius of curvature of the rounded tip portions, and a plurality of gently sloped sections each connecting an edge of a tip member with the adjacent gullet, and wherein each sloped section is at an angle of approximately 40° to a line extending radially from the center of the disk member through the tip portion of the adjacent tip member.

4,250,969

MECHANICAL HOE

Pedro Orlanda, Rua Maestro Grossi, 318, Jaboticabal, Sao Paulo, Brazil

Filed Oct. 2, 1979, Ser. No. 81,196
Claims priority, application Brazil, Oct. 3, 1978, 7086586
Int. Cl.³ A01B *39/08, 39/10, 39/18*
U.S. Cl. 172—97 **7 Claims**



1. Cultivating apparatus for attachment to a tractor, said tractor including a frame, motive power means, rear wheels driven by said power means and power take-off means, said cultivating apparatus comprising a chassis, the inboard end of which is connected to the frame behind said rear wheels and disposed at substantially a right angle thereto, the outboard end of said chassis extending to one side of the tractor beyond the line of travel of said wheels, an arm mounted on a shaft at the outboard end of said chassis beneath the lower surface thereof, said arm capable of pivotal and vertical movement on said shaft, cutting elements rotatably mounted on opposite ends of said arm and extending downwardly therefrom, eccentric means carried by said chassis means connecting said eccentric means to said arm adjacent the ends thereof, means connecting said eccentric means to the power take-off means of said tractor to actuate said eccentric means whereby upon actuation of said power take-off means, said eccentric means imparts both vertical and oscillatory movement to said arm causing said cutting elements to perform a cultivating operation simulating manual hoeing movement.

4,250,970

AUTOMATIC COULTER DEPTH CONTROL

Billy J. Pfenninger, and Otto Kahler, both of Hutchinson, Kans., assignors to Krause Plow Corporation, Hutchinson, Kans.

Filed Nov. 3, 1978, Ser. No. 957,361
Int. Cl.³ A01B *19/10, 63/32, 63/114*
U.S. Cl. 172—142 **8 Claims**

1. A farm implement comprising: a frame;

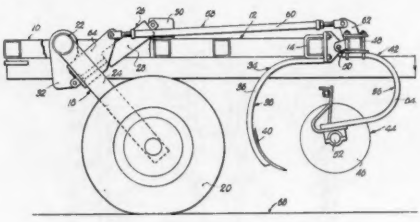
ground-engaging means having structure connecting the same with the frame in supporting relationship to the latter;

power means interconnecting said structure and the frame for raising and lowering the latter;

tillage means mounted on the frame for up and down movement therewith;

cutter means disposed ahead of said tillage means;

means mounting said cutter means on the frame for up and down movement in unison with the frame and with the tillage means in response to actuation of said power means whereby to control the depth of penetration of the tillage means and the cutter means into the ground,



said mounting means attaching the cutter means to the frame for up and down movement of the cutter means relative to the frame; and

mechanism operably coupling the cutter means with said structure for lowering the cutter means relative to the frame in response to raising of the frame by said power means,

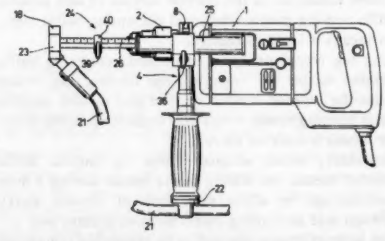
said structure including a shaft carried by the frame rearwardly of said mounting means and rockable about a second axis generally parallel with said horizontal axis, and arm means connecting the ground-engaging means with the shaft for up and down swinging movement of the arm means in response to rocking of the shaft, said power means being coupled with the shaft for rocking the latter.

4,250,971

PARTICULATE MATERIAL INTERCEPTING ARRANGEMENT FOR A HAND-HELD TOOL

Wilbert Reibetanz, Leinfelden; Horst Sigg, Stuttgart; Herbert Wiesner, Leinfelden; Karl Wanner, Echterdingen; Gernot Hänsel, Stuttgart; Karl Seitz, Filderstadt, and Manfred Bleicher, Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 863,164, Dec. 22, 1979, abandoned. This application Jul. 9, 1979, Ser. No. 56,101
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1977, 2705410
Int. Cl.³ B23B *45/14*
U.S. Cl. 173—21 **6 Claims**



1. In a hand-held power tool, a combination comprising a housing having a cylindrical extension;

an auxiliary handgrip having a body portion;

means for mounting said body portion on said housing, including two shell-shaped clamping members one of which is rigidly connected to said body portion and both of which together bound a passage for clampingly receiving said cylindrical extension of said housing, a pivot connecting said clamping members to each other at one side of said passage for relative pivoting between an open releasing position and a closed clamping position, and a clamping screw so connected to said clamping members at the opposite side of said passage as to displace said clamping members into said clamping position when being tightened;

a profiled rod; and

means for holding said profiled rod and said auxiliary handgrip in a plurality of positions, and wherein said clamping screw is also operative for operating said holding means at least in said clamping position of said clamping members for said holding means to arrest said profiled rod in the then assumed position thereof relative to said handgrip, said holding means including a through bore in one of said clamping members having a cross-sectional shape corresponding to that of said profiled rod, and a holding plate mounted on said clamping screw and penetrating into said through bore in said clamping position of said clamping members to reduce said cross-sectional shape of said through bore and thus clamp said profiled rod between the latter and itself, said profiled rod and said holding plate having mutually facing engagement surfaces provided with corrugations which engage each other in said clamping position of said clamping members.

4,250,972

PNEUMATIC RAM BORING DEVICE

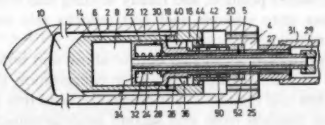
Paul Schmidt, Postfach 9, 5940 Lennestadt, Fed. Rep. of Germany

Filed Mar. 30, 1979, Ser. No. 25,722

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820785

Int. Cl.³ E21B *7/26*

U.S. Cl. 173—91 **11 Claims**



1. In a self-propelled pneumatic ram boring device for boring holes in the ground, said device comprising a tubular housing, a percussion piston mounted for reciprocating movement in said housing means defining radial control ports in said piston and a control sleeve which is operative to control said reciprocating movement of said piston in dependence upon the passage of said ports over said sleeve, the improvement comprising means rigidly fixing said control sleeve in position in said housing, means defining change-over ports in said control sleeve, passage means for flowing compressed air to said change-over ports, a first valve member cooperating with said control sleeve for interrupting or opening the flow of compressed air through said passage means, means for remotely controlling said first valve member from outside said housing, said means for remotely controlling said first valve member includes pneumatic actuating means for supplying compressed air from outside said housing to said first valve member, a first compressed air duct for the supply of compressed air to reciprocate said piston and drive said device and wherein said pneumatic actuating means includes a second compressed air duct co-axial with said first compressed air duct.

4,250,973

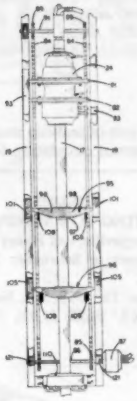
ROCK DRILLING APPARATUS

James D. Hall, Box 47, Atlin, British Columbia, Canada (V0W 1A0)

Filed Mar. 5, 1979, Ser. No. 17,140

Int. Cl.³ B23Q *5/00*; E21C *5/00*

U.S. Cl. 173—147 **3 Claims**



1. A stabilizing apparatus for stabilizing the drill stem of a rock drill drilling assembly wherein the assembly has a mast having a base, and a vertically movable driven chuck for rotating the drill stem, the stabilizing apparatus comprising:

(a) a pair of vertically disposed parallel guide rails mounted on the mast,

(b) means for connecting the chuck to and between the rails for vertical sliding movement,

(c) a pair of endless driving elements mounted on the mast on opposite sides of and connected to the chuck for elevating and lowering the latter,

(d) at least one collar assembly slidably mounted on the rails for vertical movement, the collar assembly having a collar for rotatably and slidably receiving the drill stem and arms extending from the collar, the arms having passages through which the endless driving elements freely pass,

(f) detent elements mounted on the endles driving elements below the collar assembly adapted to engage the collar assembly for elevating the latter when the driving elements are operated to elevate the chuck so as to provide rotatable support for the drill stem between the chuck and mast base.

4,250,974

APPARATUS AND METHOD FOR DETECTING ABNORMAL DRILLING CONDITIONS

Joe K. Heilhecker; Leon H. Robinson, Jr., and Beldon A. Peters, all of Houston, Tex., assignors to Exxon Production Research Company, Houston, Tex.

Filed Sep. 25, 1978, Ser. No. 945,286

Int. Cl.³ E21B *21/08*

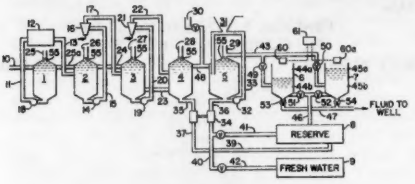
U.S. Cl. 175—48 **23 Claims**

1. In a method of drilling a well through earth formations wherein mud is circulated in a mud system from the surface through a drill string in the well and back to the surface, the improvement which comprises:

(a) removing material including drilled solids from the mud system at the surface;

(b) adding makeup mud to the mud system responsive to and at substantially the same rate as the material being re-

moved to maintain a substantially constant volume in the mud system under normal circulating conditions; and



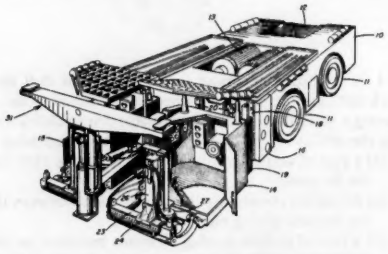
(c) monitoring the rate of makeup mud added to the system to detect an abnormal circulating condition.

4,250,975

CAB MOUNTING FOR MINING MACHINE

William R. Cobb, Murrysville, and Henry P. Barthe, Pittsburgh, both of Pa., assignors to Schroeder Brothers Corporation, McKees Rocks, Pa.

Filed Apr. 16, 1979, Ser. No. 30,218
Int. Cl.³ B62D *33/06, 33/08*
U.S. Cl. 180—89.13 **6 Claims**



1. In a mining machine or the like having a chassis defining a base generally parallel to the mine floor, means for mounting two cabs which can be independently and transversely extended outside the nominal width of the chassis comprising:

at least one larger diameter tube mounted to said chassis parallel to the base of the chassis and transverse thereto, said large tube extending substantially the width of the said chassis, said large tube having a first open end and a second open end with a bushing positioned therein,

one medium diameter tube coaxial with the large diameter tube and having an exposed end extending outwardly of said first large open end,

one small diameter tube coaxial with said large and medium diameter tubes and having an exposed end extending outwardly of said second end through said bushing,

the large, medium and small diameter tubes being telescoped one over the other, the inner and outer diameters of said tubes and the bushing being such that facing surfaces are in sliding engagement,

the length of said medium and small tubes being less than the length of the large tube but long enough so that when both are at their outermost extension they still interengage,

two cab supporting brackets each having at least one partially cylindrical arm which slides over the outer surface of the large tube, one cab bracket being secured to the exposed end of the small diameter tube and the other cab bracket being secured to the exposed end of the medium diameter tube,

first extensible hydraulic means attached at one end to one cab bracket and at another end to the chassis and second extensible hydraulic means attached at one end to said other cab and at another end to the chassis,

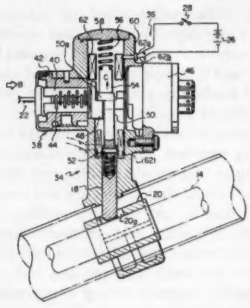
whereby independent extension of said first and second extensible means provides for the independent transverse extension of said cab brackets.

4,250,976

STEERING LOCK DEVICE WITH SAFETY SYSTEM

Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Apr. 12, 1979, Ser. No. 29,309
Claims priority, application Japan, May 22, 1978, 53-59952
Int. Cl.³ B60R *25/02*
U.S. Cl. 180—271 **6 Claims**



1. A steering lock device for locking a steering shaft of a motor vehicle when an ignition key setting in an ignition key cylinder is turned to a first predetermined position at standstill of the vehicle, comprising:

a bolt capable of locking said steering shaft when moved in a first direction;

biasing means for biasing said bolt to move in said first direction;

lifting means for moving said bolt in a second direction opposite to said first direction against the force of said biasing means when said ignition key is turned to a second predetermined position, and finally holding said bolt in an unlocking state wherein said bolt unlocks said steering shaft; and

a solenoid disposed about said bolt to allow said bolt to be kept in said unlocking state under energization thereof even when said ignition key is returned to said first predetermined position from said second predetermined position.

4,250,977

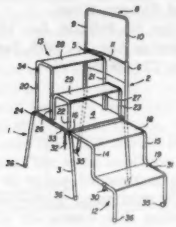
COMBINED SEAT AND STEP-LADDER ARRANGEMENT

Peter Deli, 4 chemin de la Montagne, 1224 Chene-Bougeries, Canton of Geneva, Switzerland

Filed Jul. 18, 1979, Ser. No. 58,692
Int. Cl.³ A47C *13/00*
U.S. Cl. 182—33.6 **4 Claims**

1. A combined seat and step-ladder arrangement comprising a rigid structure having a support portion, and comprising first and second step units hingedly mounted on opposite portions of the rigid structure, said units each having two steps and being adapted, in an inoperative position, to be stowed under the support portion, and, in an operative position, the first to come to bear on the ground beside the rigid structure and the second to come to bear on the rigid structure such as to be disposed above the support portion, the steps of the first unit being arranged to be disposed in alignment with the steps of

the second unit in said operative position to form a continuous flight and to be disposed in substantially parallel adjacent



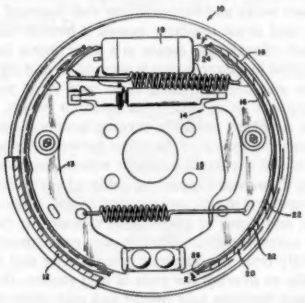
relationship with the steps of the second unit in said inoperative position.

4,250,978

LINING WEAR SENSOR

Donald F. Borkowski, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 2, 1979, Ser. No. 54,364
Int. Cl.³ F16D *66/02*
U.S. Cl. 188—1 A **3 Claims**



1. In a drum brake assembly with a brake lining wear warning device having a backing plate, a pair of brake shoes carried by the backing plate, said brake shoes including friction pads carried by rim portions of said brake shoes, a hydraulic actuator to urge said friction pads into braking engagement with a brake drum, and at least one brake shoe including a lining wear sensor for producing an audible warning signal when the friction pad has been worn to a predetermined thickness, said sensor including a body portion with a plurality of projecting portions projecting therefrom, said projecting portions being engageable with said brake drum when said friction pad has been worn to a predetermined thickness to generate said warning signal, the improvement wherein:

said sensor body portion is disposed within a groove in said friction pad between said friction pad and said brake shoe rim, said groove extending from one end of said friction pad to an opposite end of said friction pad;

said groove, said friction pad and said brake shoe rim cooperating with said sensor body portion to retain said sensor in a position such that at least one of said projecting portions engages said brake drum when said friction pad has been worn to said predetermined thickness;

said sensor body portion extending between said ends of said friction pad, said projecting portions cooperating with said friction pad ends to retain said body portion within said groove; and

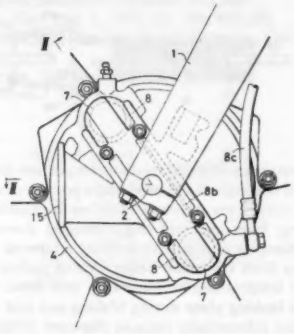
said sensor body portion being retained in substantially parallel engagement with a surface of said brake shoe rim adjacent said friction pad, said projecting portions extending substantially perpendicularly away from said brake shoe rim.

4,250,979

DISC BRAKE APPARATUS

Takeshi Kawaguchi, Fujimi, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 20, 1979, Ser. No. 22,269
Claims priority, application Japan, Mar. 29, 1978, 53-35438
Int. Cl.³ F16D *55/02*
U.S. Cl. 188—71.6 **8 Claims**



1. A brake disc apparatus for a front wheel for a motorized two-wheeled vehicle such as a motorcycle or the like, comprising:

(a) a wheel hub having therein an air space in communication with the external air;

(b) a pair of left and right side panels disposed on opposite sides of said wheel hub;

(c) a pair of left and right brake pistons disposed at the inner surfaces of said side panels;

(d) a pair of brake discs, said discs in distalproximate arrangement to their corresponding brake pistons, each of said discs being secured to a side surface of the wheel hub; and

(e) plural fins provided on the back surface of each disc brake, said fins projecting from said discs, said fins being exposed to the interior of said air space provided within said wheel hub,

whereby advancement of said brake discs during braking action will cause said plural fins to act as centrifugal fans which will introduce cool air into said air space and will thus improve the heat diffusion characteristic of the apparatus, said air space being formed between the left and right side panels and being provided on its front surface with an opening adapted for the introduction of external air.

4,250,980

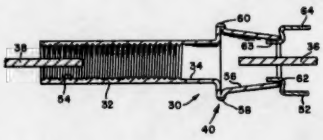
DRUM BRAKE ADJUSTER

Michael A. Kluger, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Feb. 9, 1979, Ser. No. 10,880
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—79.5 P **3 Claims**

1. In a drum brake assembly having a pair of brake shoes cooperating with a hydraulic actuator to move radially outwardly within a braking plane from a non braking position to a braking position, a strut cooperating with the pair of brake shoes to substantially define the non braking position, an adjustment pawl cooperating with the strut to impart rotation to the latter to vary the spacing between the pair of brake shoes, and a parking lever cooperating with the strut to move the pair

of brake shoes to the braking position in response to a parking brake application characterized by said strut comprising a single integral sleeve engageable with said pair of brake shoes, said single integral sleeve defining a bore extending the length thereof to receive portions of said pair of brake shoes within said bore, the wall of said bore defining internal threads at one end which threadably engage one of said pair of brake shoe portions and the wall of said bore at the other end defining an enlarged diameter portion which receives the other brake shoe portion to permit movement of the latter within said enlarged



diameter portion, said enlarged diameter portion also receiving a portion of said adjustment pawl and a portion of said parking lever to provide a pivotal connection between said adjustment and parking lever and said single integral sleeve, and said enlarged diameter portion also defining a tapered wall which slants away from said other brake shoe to permit rotation of said single integral sleeve relative to said other brake shoe within said braking plane during braking and said other brake shoe portion substantially remains disposed within said bore during said braking plane rotation of said single integral sleeve.

4,250,981

LOAD RESPONSIVE DRUM BRAKE ASSEMBLY

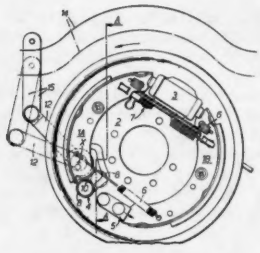
Alexander J. Wilson, Sutton Coldfield; Hugh G. Margetts, Leamington Spa, and Geoffrey Harvey, Birmingham, all of England, assignors to Lucas Industries Limited, Birmingham, England

Filed Jul. 10, 1979, Ser. No. 56,229

Claims priority, application United Kingdom, Jul. 10, 1978, 29345/78

Int. Cl.³ F16D *51/24, 65/09*

U.S. Cl. 188—327 **15 Claims**



1. A load responsive drum brake assembly comprising a vehicle having a sprung part and an unsprung part, a rotatable brake drum having a braking surface mounted on said unsprung part, at least one brake shoe, mounted within the drum and movable towards and away from said brake surface, actuating means acting on one end of the brake shoe for urging the brake shoe towards said braking surface, an abutment engaged by the other end of the brake shoe, the abutment being constructed and arranged movable to vary the point of engagement of the shoe therewith and thereby the braking effort applied to the braking surface for a given actuating force applied by the actuating means, and a linkage connecting said abutment to said sprung vehicle part, relative movement of the said sprung and unsprung parts effecting movement of said linkage to move said abutment.

4,250,982

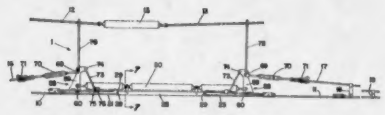
SECTION INSULATOR FOR CATENARY SYSTEMS

John W. Senften, Sun City West, Ariz., assignor to Harvey Hubbell, Incorporated, Orange, Conn.

Continuation-in-part of Ser. No. 869,036, Jan. 13, 1978, Pat. No. 4,187,934. This application Aug. 27, 1979, Ser. No. 69,617

Int. Cl.³ B60M *1/18*

U.S. Cl. 191—39 **11 Claims**



1. A section insulator assembly for mounting between spaced aligned ends of two contact wires of an overhead power supply of an electrified transportation system, there being a supporting cable above said contact wires, said assembly comprising main strain insulator means extending between the ends of the two contact wires at a level above the level of the contact wires, rigid means secured to each contact wire and to the adjacent ends of the strain insulator means, the strain insulator means being secured to the rigid means at a level above the level of the contact wires, thereby to maintain tension in the contact wires, a runner disposed between the ends of the contact wires and supported by and disposed at a level lower than said strain insulator means, a tension member secured to each of said rigid means at a level above the level at which the strain insulator means is secured to said rigid means, said tension member extending from said rigid means in a direction opposite from said strain insulator means, whereby said tension members resist the turning moments imposed on the rigid means by reason of the offset between the axes of the contact wire and the strain insulator means, means extending downwardly from said supporting cable adjacent each end of said strain insulator means and secured to and supporting said rigid means, and a pair of glider arms mounted at the ends of the contact wires, the glider arms in each pair extending laterally outwardly from the adjacent contact wire and extending longitudinally to overlap the ends of said runner, there being lateral air gaps between said runner and said glider arms.

4,250,983

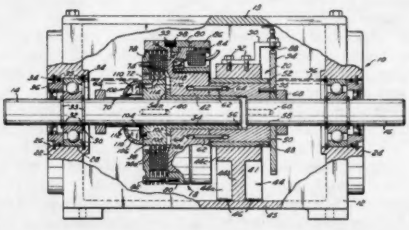
CLUTCH APPARATUS AND CONTROL

Kenneth E. Handke, 2034 Mayview Ave., Cleveland, Ohio 44109

Continuation-in-part of Ser. No. 829,273, Aug. 31, 1977, abandoned, which is a continuation-in-part of Ser. No. 325,553, Jan. 22, 1973, abandoned, which is a continuation-in-part of Ser. No. 170,852, Aug. 11, 1971, abandoned. This application Jul. 11, 1979, Ser. No. 56,637

Int. Cl.³ F16D *43/04, 35/00, 67/06*

U.S. Cl. 192—12 D **31 Claims**



1. In a method of manufacturing a variable speed drive having an input shaft, an output shaft, a hydroviscous clutch connecting the shafts, the clutch being of the type wherein films of liquid are maintained between adjacent discs, and

torque transmission varies inversely with the thickness of the films, that is, inversely with the spacing between the discs, the improvement comprising the steps of providing means for combining (1) electromagnetic actuation of the clutch to vary the spacing and film thickness between adjacent discs and thereby provide corresponding changes in torque transmission under the control of an electrical power signal with (2) electronic conversion of sensed output errors to modulations of the power signal, and selecting said liquid and said discs so that, upon increasing drive output speeds, the dynamic coefficient of friction between the liquid and the discs remains equal to or decreases towards the static coefficient of friction, said discs including one or more friction surfaces of bonded fibrous material, and said liquid comprising a light grade oil specially compounded to cooperate with said discs to promote said dynamic and static coefficient of friction relationship.

4,250,984

ELECTROMOTOR DRIVEN REGULATING ARRANGEMENT, ESPECIALLY FOR REGULATING THE SPEED OF A MOTOR VEHICLE

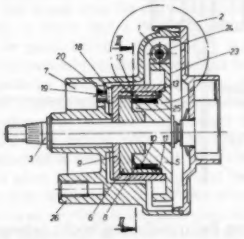
Alfred Hoyler, Bühlertal, and Bernd Niklaus, Rastatt, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 22, 1978, Ser. No. 962,896

Claims priority, application Fed. Rep. of Germany, Dec. 31, 1977, 2759188

Int. Cl.³ F16D *13/02, 13/08*

U.S. Cl. 192—12 D **14 Claims**



1. An electromotor driven regulating arrangement, especially for regulating the speed of a motor vehicle, comprising a housing; an input shaft rotatably mounted in said housing; a reversible electromotor connected to said input shaft for rotating the same; an output shaft rotatably mounted in said housing; coupling means for coupling and decoupling the shafts, said coupling means comprising two coupling members respectively connected to said input shaft and said output shaft for rotation therewith, each of said coupling members having a cylindrical surface being arranged radially spaced from and concentric with each other, and looped spring means for connecting said coupling members for simultaneous rotation in either direction of rotation of said input shaft being arranged between said cylindrical surfaces, slidingly engaging one of said cylindrical surfaces and having a pair of angularly bent ends, the other of said cylindrical surfaces being provided with two abutment faces arranged in such a manner that during rotation of the two coupling members relative to each other one of said spring ends will engage one of said abutment faces; and control means comprising a control member cooperating with said looped spring means and electromagnet means cooperating with said control member for rendering said coupling means active or inactive depending on whether the electromagnet means is energized or deenergized, and wherein said control member has a pair of control faces which, when said electromagnet means is deenergized, are arranged stationarily in the path of movement of said abutment faces and said spring ends in such a manner that one of said spring ends is arranged with play between one of said control faces and one of said abutment faces, and wherein said looped spring means engages the radially inner of said cylindrical surfaces and wherein the radially outer of said cylindrical surfaces is provided with a cutout through which said bent spring ends project, said control member having a projection bounded in circumferential direction by said control faces and extending into said cutout in said radially outer cylindrical surface.

4,250,985

POWER TRANSMISSION SYSTEM

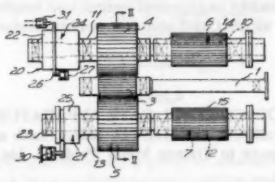
Herbert A. Clements, Woking, England, assignor to S.S.S. Patents Limited, Sunbury-on-Thames, England

Filed Dec. 1, 1978, Ser. No. 965,333

Claims priority, application United Kingdom, Dec. 23, 1977, 53681/77

Int. Cl.³ F16D *23/10, 21/00*

U.S. Cl. 192—48.7 **9 Claims**



1. A power transmission system comprising a synchronous main toothed clutch and at least one subsidiary toothed clutch, said main and subsidiary clutches being arranged in parallel in main and subsidiary power paths respectively between an input shaft of the system and an output shaft of the system, actuating means controlled by the main clutch for effecting inter-engagement with clearance of the co-acting clutch teeth of the subsidiary clutch, said actuating means being rendered operative after engagement of the main clutch has commenced, the main power path having a torsional stiffness which is substantially less than that of the subsidiary power path over at least an initial part of the range of torque loading between zero and full power, such that at a pre-determined power the main power path and the subsidiary power path transmits substantially the same load.

4,250,986

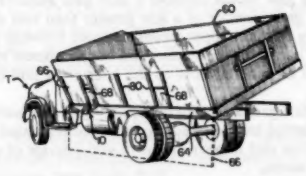
GRAIN CHUTE

Howard D. Buehler, 1001 W. County Rd. 2E, Berthoud, Colo. 80513

Filed Nov. 29, 1978, Ser. No. 964,689

Int. Cl.³ B65G *11/00*

U.S. Cl. 193—5 **2 Claims**



1. A grain chute adapted for removable attachment to a truck box which has a floor, a frame member around the perimeter of the floor extending downwardly from the plane of the floor, side boards mounted on pivotal brackets around the perimeter of said floor, said brackets extending outwardly from the plane of the floor and downwardly a spaced distance from said frame member, and a grain gate in one of said sides over said bracket, said grain chute comprising:

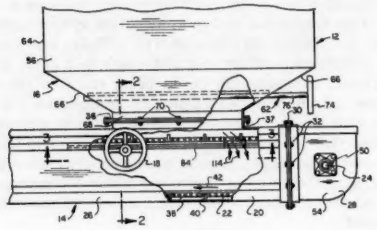
an inclined channel having a planar bottom panel, and two side panels extending upwardly from opposite lateral edges, respectively, of said bottom panel, said channel having an inlet opening at its higher end between the edges of said side panels at the higher ends thereof, an outlet opening at its lower end between the edges of said side panels at the lower ends thereof, and an attachment member extending rigidly outwardly from said channel in the plane of said bottom panel and terminating in a rigid upwardly extending lip having an upwardly extending length exceeding the distance between said frame member and said bracket, and said attachment member being adapted to receive the downward extension of said bracket between said inlet opening and said lip with said lip protruding upwardly between said frame member and said bracket with its distal end abutting against said bracket, the base end of said lip acting as a fulcrum about which the weight of said channel tends to rotate said attachment member thereby forcing the distal end of said lip into binding engagement against said bracket and said frame to support said chute in position under the grain gate.

4,250,987

FLOW CONTROL GATE APPARATUS

Edward L. Trammell, and Hugh D. Kelley, both of Wichita, Kans., assignors to Tramco Metal Products, Inc., Wichita, Kans.

Filed Dec. 1, 1978, Ser. No. 965,232
Int. Cl.³ B65G *47/19*
U.S. Cl. 198—530 **4 Claims**



1. A flow control gate apparatus operable to regulate and control material flow, comprising:

(a) a conveyor means operable to receive the material and move same longitudinally;

(b) a hopper means mounted on said conveyor means to hold material therein for selective discharge into said conveyor means through a flow control valve and a discharge opening;

(c) a slide gate means includes a slide gate assembly having a slide gate member of a size greater than said discharge opening on said hopper means mounted between a portion of said conveyor means and said hopper means to control amount of material flow to the interior of said conveyor means;

(d) said slide gate assembly selectively movable horizontally by a control handle assembly to permit regulated material flow from said hopper means to said interior of said conveyor means;

(e) said slide gate member positioned below said discharge opening in said hopper means and movable from fully opened to closed positions and operable in the fully opened position to allow maximum flow of material through said discharge opening in said hopper means;

(f) said slide gate member mounted for horizontal, longitudinal movement in a connector plate assembly;

(g) said connector plate assembly mounted about said discharge opening;

(h) said control handle assembly engageable with said slide gate member to move same horizontally for material flow through said discharge opening in said hopper means;

(i) said control handle assembly includes a handle member mounted on a main control shaft having opposite end portions rotatably mounted in bearing members; and

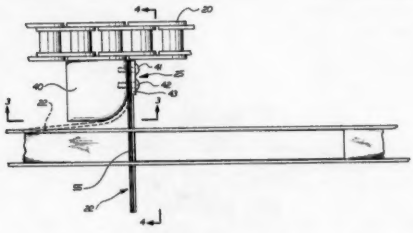
(j) said control handle assembly includes a pinion gear member mounted on said main control shaft and a rack member secured to the center and undersurface of said slide gate member to prevent clogging thereof by the material flow.

4,250,988

MECHANISM FOR TRANSFERRING BOOKS AND THE LIKE

Leonard Miaskoff, Easton, Pa., assignor to Harris Corporation, Melbourne, Fla.

Filed May 4, 1979, Ser. No. 35,814
Int. Cl.³ B65G *19/00*
U.S. Cl. 198—719 **2 Claims**



1. A mechanism for transferring books between work stations in a bindery comprising a conveyor chain, a raceway located along said conveyor chain and for supporting books thereon, a plurality of pusher means projecting from said conveyor chain, each said pusher means having a surface spaced above said raceway for engaging a surface of a respective book to push same along said raceway, a plurality of lugs secured to said conveyor chain, fastener means for securing each of said pusher means to a respective lug, each of said pusher means comprising a pusher finger construction for bending backwardly relative to the direction of movement thereof upon encountering a predetermined resistance to movement of a book being pushed thereby and for passing beyond said book providing said predetermined resistance due to being moved by said conveyor chain, each of said pusher finger constructions comprising at least one deflectable blade projecting in cantilever fashion from a respective lug over said raceway when pushing a book therealong and thus bending backwardly and toward said conveyor when encountering said predetermined resistance, said blade being curved in cross section in a direction transverse to the direction of book movement, each of said lugs having a surface portion which is correspondingly curved and said blades engaging said correspondingly curved surface portion when moving a book, each of said lugs having a further surface portion curved in a direction parallel to the direction of conveyor movement and providing a curved surface portion around which said blade bends when encountering said predetermined resistance, said further surface portion also being curved to correspond with the curve of said blade in a direction transverse to the direction of book movement.

4,250,989

CURVED SECTION AND GUIDE ASSEMBLY

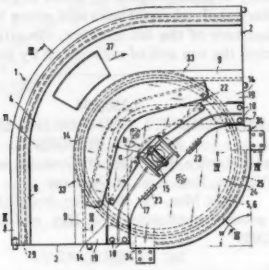
Dieter Gründken, and Bodo Kerklies, both of Lunen, Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 20, 1979, Ser. No. 32,238

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1978, 2817949

Int. Cl.³ B65G *19/00, 23/00*

U.S. Cl. 198—729 16 Claims



1. A curved section and guide assembly for a scraper-chain conveyor, the assembly comprising a curved conveyor section and a guide for guiding the scraper assembly of the conveyor around the curve, the curved conveyor section having a curved inner wall, a curved outer wall and a floor panel which define upper and lower runs for the scraper assembly which is constituted by a chain and a plurality of scrapers secured thereto, and the guide being constituted by two pulley wheels which are independently rotatably mounted on a vertical axle extending upwardly from a base plate arranged beneath the pulley wheels, a cover plate being arranged above the pulley wheels, the pulley wheels extending through the inner wall of the curved conveyor section, both the base plate and the cover plate being attached to said inner wall, and both the floor panel and the cover plate extending towards and being spaced radially from the axle, wherein the lower end of the axle is removably received in an opening in the base plate and the upper end of the axle is supported by and detachably connected to a carrier plate which extends over and which is detachably connected to the cover plate.

4,250,990

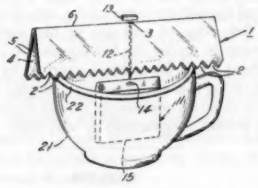
INFUSION BAG WITH CROSSBAR SUSPENSION

Diane Casper, 35 E. 85th St., New York, N.Y. 10028

Continuation of Ser. No. 886,940, Mar. 15, 1978. This application Aug. 21, 1979, Ser. No. 68,396

Int. Cl.³ B65B *29/02;* B30B *5/02;* B65D *85/00*

U.S. Cl. 206—0.5 2 Claims



1. An infusion bag assembly for tea or other infusible material comprising a porous bag, resilient means for supporting said bag, said resilient supporting means comprising a filament slidably secured to a crossbar through a hole at the apex of said crossbar, said crossbar being adapted to fit over the rim of a cup, and comprising two elongated plates adapted to squeeze excess water from the infusion bag, said crossbar further being in the shape of an inverted "V" so as to provide visual observation of the interior of the cup without requiring its removal and further having serrated edges adapted to fit over the opposite portions of the rim of a cup and balance itself upon cups of various sizes.

4,250,991

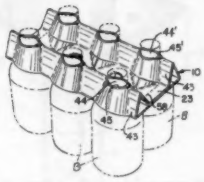
BOTTLE CARRIER

Guelfo A. Manizza, Blauvelt, N.Y., and George S. Holmes, Waldwick, N.J., assignors to Federal Paper Board Company, Inc., Montvale, N.J.

Filed Aug. 17, 1979, Ser. No. 67,581

Int. Cl.³ B65D *85/62, 71/00, 75/00*

U.S. Cl. 206—158 14 Claims



1. A carrying member for a group of articles in the form of bottles which have a substantial neck portion and a closure cap with a depending annular skirt formation, the bottles being arranged in double row transversely paired relation and the carrying member being formed of a cut and scored blank of paperboard, or similar foldable sheet material, which is divided into wall forming panels, folded about an assembly of the bottles and its ends connected so as to form when set up, a tube of generally rectangular cross section with a bottom wall forming panel having two parallel rows of spaced apertures disposed along opposite side margins of the panel, which apertures extend inwardly from the side edges of the panel and which are of a size and configuration so as to be positioned in encircling relation on the bottle necks in substantially spaced relation below the bottom edges of the cap skirts, said carrier including sidewall panels which extend upwardly of opposite side edges of said bottom wall panel and which are inclined inwardly thereof, said upwardly extending sidewall panels each having a hinged connection with a cooperating inner wall panel which extends downwardly with an inward inclination to a hinged connection with a top wall forming panel which is disposed in overlying relation to a central portion of the uppermost face of the bottom wall forming panel, said upwardly extending sidewall panels and associated inner wall panels having spaced apertures in the hinge line at the top edge of each of said panels of a size and configuration to engage the aperture defining edges of the panel material beneath the bottom edge of the cap skirts, said wall panels being scored in the direction relative to the direction of the rows of bottles so that upon forcing said carrier member down onto the top portions of the bottle, portions of the panels are folded in accordian fashion inwardly of the open ends of the carrier member.

4,250,992

RETURNABLE BEVERAGE CARRIER

Earl F. Gilbert, Farmington Hills, Mich., assignor to Westvaco Corporation, New York, N.Y.

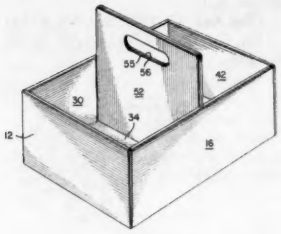
Filed Aug. 2, 1979, Ser. No. 62,986

Int. Cl.³ B65D *5/46, 5/48*

U.S. Cl. 206—162 3 Claims

1. A substantially rectangular blank of corrugated paperboard or the like for forming a returnable bottle carrier including an integral handle which divides the carrier into two equally sized carrying compartments, said blank comprising, a rectangular outer bottom panel located substantially centrally of said blank, a pair of outer end walls foldably attached to two

opposed edges thereof, a pair of inner end walls foldably attached to the free edges of said outer end walls, a plurality of intermediate side walls foldably attached to the ends of said inner end walls, at least one pair of partition/handle panels each of which contain matching handhole cut-outs foldably attached to diagonally opposed intermediate side walls at each side of the blank, a pair of outer side walls foldably attached to the remaining opposed edges of said rectangular outer bottom panel, a plurality of intermediate end walls foldably attached to



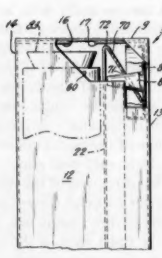
the ends of said outer side walls, a pair of inner side walls and a pair of inner bottom panels foldably attached to the free edges of said inner side walls, the improvement wherein said blank contains a pair of slots at opposite sides thereof, which slots are of a width that is substantially equal to the thickness of said blank material multiplied by the number of partition/-handle panels associated with said blank, and which slots substantially bisect the opposed inner side walls and inner bottom panels into equally sized pairs to form friction locks for the carrier blank.

4,250,993

CARTON FOR CONTAINER AND CAP

Harry I. Roccaforte, Western Springs, Ill., and Richard J. Dewiggins, Fairfield, Ohio, assignors to Champion International Corporation, Stamford, Conn.

Filed Jun. 25, 1979, Ser. No. 51,890
Int. Cl.³ B65D *77/00*
U.S. Cl. 206—216 **5 Claims**



1. A carton including a main and an auxiliary compartment, said auxiliary compartment for holding an article therein, said article having a projecting prong connected to a cap member, said carton including a means for supporting said article adjacent the top end thereof, said carton comprising:

an elongated tubular side wall having top and bottom ends and including opposed, parallel front and back walls, and a pair of opposed, parallel side walls;

means for closing said top and bottom ends of said tubular side wall;

an auxiliary wall extending between said front and back walls and connected thereto, said auxiliary wall being disposed parallel to said side walls, said auxiliary wall for defining said main and auxiliary compartments within said carton; and

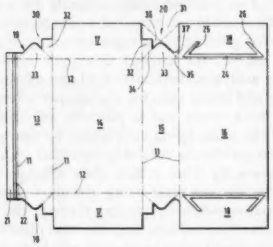
support means including a single unitary tab member hingedly connected to the top edge of said auxiliary wall, with the length of said tab member, measured from said hinged connection to the opposed free end thereof, being greater than the width of said auxiliary compartment, measured from said auxiliary wall to the associated side wall, said tab member including a central aperture therein, said single tab member being wholly disposed within said auxiliary compartment at an acute angle relative to said auxiliary wall, whereby with said prong being received in the aperture of the tab member, the article is supported adjacent the top end of said carton by said tab member.

4,250,994

CIGARETTE PACK LAMINATE HAVING RAISED SEALING RIDGES

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,003
Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812059
Int. Cl.³ B65D *85/10*
U.S. Cl. 206—273 **8 Claims**



1. A cigarette pack made from a laminated blank having a thermally weldable outer layer with raised resiliently deformable linear bead portions oriented for sealed pack closure purposes the blank having surface portions of equal length defining a narrow width tube forming flap (**21**), side walls, a front wall and a rear wall (**16**), and adapted to be folded into a rectangular tube surrounding a group of cigarettes (**10**) with the tube forming flap underlying the sealed to an inner free edge of one of the walls, the blank further having end closing flaps (**17–20**) adjoining the front, side and rear walls, projecting out beyond the group of cigarettes, and folded against the ends of the group of cigarettes and sealed to each other, characterized by:

(a) One of the tube forming flap and the inner free edge of said one of the walls having one of said raised linear beads directed toward the other of the tube forming flap and the inner free edge of said one of the walls and extending continuously across the full length thereof, and

(b) the bead being completely overlaid by the other of the tube forming flap and the inner free edge of said one of the walls to ensure a continuous sealing contact in spite of any minor planar irregularities or waviness.

4,250,995

CARRYING CASE

Robert A. Lorenzini, 603 S. State Rd. 7, Margate, Fla. 33068

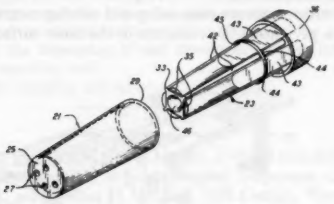
Filed Jun. 28, 1979, Ser. No. 52,833
Int. Cl.³ B65D *81/08*; A45C *11/00*
U.S. Cl. 206—314 **9 Claims**

1. A carrying case for reeds used with a woodwind instrument, said carrying case comprising:

an insert having an outer end and an inner end with a multi-

plicity of flat surfaces extending longitudinally along the outer surface of said insert between said outer end and said inner end;

a cap adapted to fit over the outer end of the insert; a flexible



ring mounted about said insert for retaining reeds on the flat surfaces of the insert, said flexible ring also contacting said tube to secure said tube in place in the insert; and

a tube having an open end and a closed end and adapted to receive the insert within it.

4,250,996

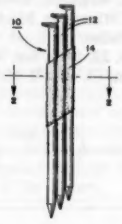
USE OF CHEMICALLY MODIFIED POLYOLEFINS FOR BONDING NAILS TOGETHER IN A CONFIGURATION SUITABLE FOR USE IN A POWER DRIVEN NAILER

Kenneth W. Bartz, Baytown, Tex., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 340,446, Mar. 12, 1973, abandoned. This application Feb. 19, 1976, Ser. No. 659,317

Int. Cl.[3] B65D *85/24*

U.S. Cl. 206—343 **28 Claims**



1. An article of manufacture comprising a plurality of fastening elements, arranged in a preselected configuration and held together in said configuration by a flexible binder composition wherein said binder composition is a blend of a C_2 to C_8 polyolefin material having a MFR of from 1 to 20 comprising 30 to 90 wt. % of a polyolefin plastic selected from the group consisting of isotactic polypropylene, high density polyethylene and mixtures thereof with 70 to 10 wt. % of an elastomer selected from the group consisting of ethylene-propylene copolymers, polybutylene and polyisobutylene, the composition grafted with from 1 to 20 weight percent of a graft component of a C_3 to C_{10} unsaturated carboxylic acid or a glycidyl derivative thereof and wherein said binder is firmly adhered to the surfaces of said fastening elements, because of the adhesive functionality imparted by said graft component, wherein said binder composition has physical property values of:

(a) Secant Flexural Modulus,

(b) Izod Room Temperature Inpur Strength,

(c) Tensile Strength, and

(d) Adhesion,

such that said binder adheres to each of said fastening elements without separating therefrom when each fastening element and a portion of binder adhered thereto are separated from said configuration and are driven into a material for fastening purposes.

4,250,997

LOCKING CAPSULE FILLED WITH VISCOUS MATERIAL

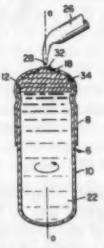
Hans U. Bodenmann, Muenchenstein, Switzerland; Louis P. Van Herle, Zandhoven, Belgium; Luc Y. Michel, Fegersheim-Ohnheim, France; Winand H. Martens, Belsele, Belgium, and Heinrich Pins, Eberbach, Fed. Rep. of Germany, assignors to Capsugel AG Corporation, Basel, Switzerland

Continuation-in-part of Ser. No. 890,753, Mar. 27, 1978, abandoned. This application May 14, 1979, Ser. No. 39,030

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1977, 2713873; Mar. 29, 1977, 7709877[U]

Int. Cl.[3] B65D *53/06, 85/00*

U.S. Cl. 206—528 **20 Claims**



1. A sealed capsule suitable for filling with a liquid or other viscous material, the capsule comprising a body part having a ridge or open end and a closed end, and a cap having an open end and a closed end wherein an aperture is formed in the closed end of the cap and being telescopically mounted on the body part, wherein the body part is filled with the liquid or other viscous material and the ridge of the body part received in the cap is sealed with respect to the adjacent area of the internal surface of the cap with a sealing composition which is inert with respect to and insoluble in the liquid or other viscous material.

4,250,998

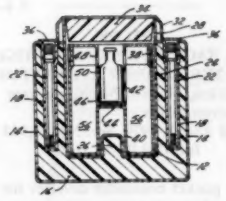
DIABETIC TRAVEL KIT

Frank Taylor, 9415 Central St., LaSalle, Quebec, Canada (H8R 2K4), assignor to Frank Taylor, LaSalle, Canada

Filed Aug. 6, 1979, Ser. No. 63,733

Int. Cl.[3] B65D *81/38, 81/18;* **F25D** *3/08*

U.S. Cl. 206—570 **5 Claims**



1. A cooler comprising an outer container having insulated peripheral and bottom walls defining a cavity, an insulated lid for closing said cavity, an inner container adapted to be received within said cavity, a top closure for said inner container, said inner container and said top closure combining when said top closure is in place closing said inner container to form a substantially annular closed cooling medium chamber surrounding an inner central pillar, said pillar providing a top opening compartment adapted to receive material for storage, opposite inner side walls of said annular closed cooling medium chamber being spaced so that when a solid ring of ice is

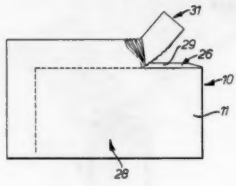
contained in said cooling medium chamber it floats to the top of water in said cooling medium chamber.

4,250,999

TEAR-OFF FLANGE FOR AN ARTICLE

Michael Milvik, 56 Geelong St., East Brisbane Old 4169, Australia

Filed Mar. 1, 1976, Ser. No. 662,419
Claims priority, application Australia, Mar. 5, 1975, PC0787
Int. Cl.³ B65D *27/34*
U.S. Cl. 206—610 **4 Claims**



1. A one piece letter sheet comprising a body portion foldable about a first orthogonal line to form two sections and about a second orthogonal line to divide said sections to form two intermediate panels positioned between a pair of outer panels; said outer panels having removable flanges extending along the outer peripheral edges thereof, a line of perforations separating each of said removable flanges from its associated outer panel to permit said removable flange to be detached therefrom, the removable flanges of one of said outer panels overlying the corresponding removable flanges of the other of said outer panels when the sheet is in its folded condition, manually sealable connector means associated with each set of overlying removable flanges, said connector means being integral with one of the removable flanges of each pair and foldable over the other removable flange in the pair, to thereby seal the folded letter sheet for postage, the peripheral edge portions of said intermediate panels being imperforate and projecting when the sheet is folded outwardly in a fixed manner beyond said line of perforations so as to constitute extensions which overlie said line of perforations and terminating inwardly of the outer edge of the said removable flange portions, said extensions being interposed between each set of removable flanges and serving to strengthen the sealed letter sheet along said lines of perforations, permitting said removable flange portions to be gripped outwardly of said extensions for removal along said line of perforations.

4,251,000

FRONT AND BACK STACKER FOR HIGH SPEED SORTER/READER APPARATUS

William B. Templeton, Howell, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 2, 1979, Ser. No. 25,913
Int. Cl.³ B07C *5/00*
U.S. Cl. 209—547 **12 Claims**

1. A receptacle pocket controller diverter for a high speed front/back item reader sorter comprising:

means providing oppositely disposed item sorting pathways opening from a straight line linear pathway leading to individual item receiving receptacles,

automatic movable diverter means for diverting items out of said straight line linear pathway into one or the other of two oppositely disposed receptacles,

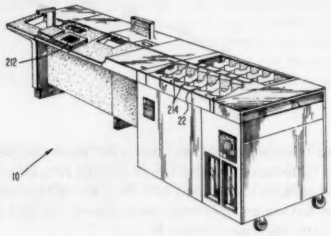
said diverter means including a gate formed by a pair of confronting, rigid, lightweight members,

said confronting, rigid members being angled slightly towards each other,

columnating means in the path of movement of said items for rigidifying said items as the items are fed to a selected receptacle,

sensing means operably associated with said diverter means for indicating the presence or absence of an item at said diverter means,

said diverter means supporting said sensing means in a fashion permitting the retention of the inner surfaces of said



confronting wall members flush to enable the smooth passage of items,

means coupled to said diverter means for moving said diverter means to a desired location effective to complete a path for said items from said linear straight line path to a selected receptacle, and

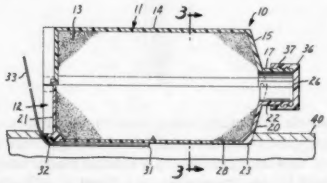
means for sensing the relative position of said diverter means with respect to the straight line linear item pathway.

4,251,001

DEVELOPER POWDER SUPPLY CARTRIDGE

Richard D. Hipp, Jr., Rushseba Township, Chisago County, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 22, 1979, Ser. No. 86,933
Int. Cl.³ B65D *83/06*
U.S. Cl. 215—237 **7 Claims**



1. A novel developer powder supply cartridge for use in a copy machine comprising

a first part having a plurality of side portions and two end portions defining a trough wherein a first of said end portions has a longitudinally extending semicylindrical spout,

a second part having a plurality of side portions and two end portions defining a trough wherein a first of said end portions has a longitudinally extending semicylindrical spout, and wherein one of the side portions has a rectangular opening extending longitudinally over a substantial portion of its area, and

wherein said first part and said second part are mated along their open sides to define a multisided bottle-like container having a centrally located and generally cylindrical longitudinally extending spout portion projecting from said first end of said container to afford the filling of said container with developer powder,

an elongated rectangular door hingedly mounted to said container and disposed to intromit and close the rectangu-

lar opening in said second part when said door is in a closed position,

means for securing said door in its closed position to said second part so as to prevent the unintentional escape of developer powder through the rectangular opening,

connecting means for removing said securing means after the insertion of said container into a copy machine so as to afford the dispensing of said developer powder into the copy machine, and

means for capping said spout.

4,251,002

TAMPERPROOF CONTAINER AND CLOSURE

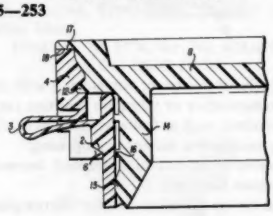
Andrew D. Middleton, 2 Bellevue Heights, Greystones, County Wicklow, and Thomas P. Mitchell, Mill Cottage, Newtownmountkennedy, County Wicklow, both of Ireland

Filed Apr. 3, 1979, Ser. No. 26,520

Claims priority, application Ireland, Apr. 4, 1978, 665/78

Int. Cl.³ B65D *41/32*

U.S. Cl. 215—253 **7 Claims**



1. A tamper proof container and closure assembly comprising a cylindrical container having a closed end and an open end, a collar integrally formed with said container above and adjacent said open end and co-axial with said container, an external circumferential band on said container adjacent said open end, a plurality of flexible straps connecting said collar and container, and inwardly projecting circumferential lip in said collar which is adapted to ride over and to snap into engagement with the circumferential band when the collar is pushed onto said open end of said container, and a plug for said collar, the plug and collar defining a closure which cannot be removed from the container without breaking the straps or distorting the material of the closure.

4,251,003

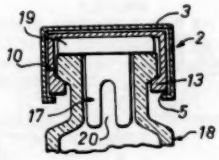
BOTTLE CLOSING DEVICE

Peter Bodenmann, Pfaffhausen, Switzerland, assignor to Toni Casutt, Zollikon, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,666

Int. Cl.³ B65D *41/58*

U.S. Cl. 215—254 **4 Claims**



1. A device for closing the mouth of a bottle used in a freeze drying operation, which mouth is surrounded by a radially outwardly extending bottle mouth rim having a given outer diameter, comprising cap means (**2**), claw ring means (**10**) made of a synthetic material, sealing stopper means operatively located in said claw ring means, said sealing stopper means including a stopper body and radially extending flange means, said stopper body including axially extending slot means (**20**), said claw ring means including claw means (**13**) adapted to reach under said bottle mouth rim in the bottle closing position when said cap means encloses said claw ring means (**10**) whereby the cap means presses the claw means substantially radially inwardly, said closing device further comprising locking means (**5, 15**) on said claw ring means and on said cap means, said locking means (**5**) of said cap means (**2**) snapping under said locking means (**15**) of said claw ring means (**10**) when the cap means (**2**) is pushed downwardly onto said claw ring means (**10**) whereby lifting off the cap means from the claw ring means, without destroying the cap means, is prevented when the latter are in the bottle closing position, said locking means comprising a bottom rim means (**5**) forming part of said cap means and facing substantially radially inwardly, said bottom in rim means (**5**) having an inner diameter sufficiently larger than said given outer diameter to provide for said snapping, said claw means (**13**) comprising radially outwardly facing edges (**15**) for engaging said bottom rim means (**5**) when the device is in the bottle closing position, said claw means being normally biased radially outwardly for permitting said snapping of said edges (**15**) into engagement with said bottom rim means (**5**) of said locking means whereby said bottom rim means reaches under said claw means in the bottle closing position and forces the claw means to engage the bottle mouth rim, and flip top means (**7,8**) forming part of said cap means for removing said cap means from said claw ring means, said axially extending slot means (**20**) of said sealing stopper means providing for venting said bottle prior to completely inserting said sealing stopper means into the bottle mouth and then sealing the latter when the sealing stopper is completely inserted, said cap means comprising a top surface including top rim means and lateral wall means extending substantially perpendicularly to said top rim means, said flip top means including handle means (**7**) normally extending substantially in the plane defined by said top surface and top rim means, gap means (**6**) substantially separating said handle means (**7**) from said top rim means (**3**), tongue means (**9**) connecting said handle means (**7**) to said top rim means (**3**) across said gap means (**6**) and to said lateral wall means, and reduced strength means (**8**) operatively interposed between said tongue means (**9**) and said top rim means and between said tongue means and said lateral wall means for pulling said flip top means out of said cap means to open a bottle.

4,251,004

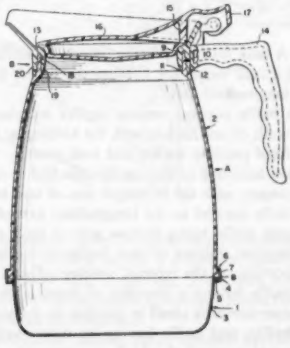
CONTAINERS

Kin C. Sun, Kowloon, Hong Kong, assignor to Kin Hip Metal & Plastic Factory Ltd., Kowloon, Hong Kong

Continuation of Ser. No. 963,472, Nov. 24, 1978, abandoned. This application Nov. 5, 1979, Ser. No. 91,230

Int. Cl.³ B65D *6/00, 8/04*

U.S. Cl. 220—4 R **8 Claims**



1. A container for liquids comprising a cup-shaped base portion made of metal, and a shell portion permanently secured

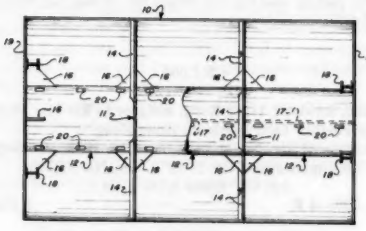
at its lower edge in liquid-tight manner to the upper edge of the base portion, the shell portion being made of plastic material and being at least partially transparent or translucent, the shell portion being secured to the base portion by an external annular rib with a downwardly facing lip on the lower edge of the shell portion fully engaged within an annular recess bounded by a flange at the upper edge of the base portion, the interfitting portions being shaped such that the shell portion is locked against movement both vertically and laterally with respect to the base portion by the flange of the base portion defining a recess which opens upwardly and an inturned lip which is spaced above the recess with the rib of the shell portion engaged in the recess between the recess-defining zone of the flange and its lip, the shell portion having an upper edge having a throat and handle assembly removably mounted in liquid tight manner thereon, the handle assembly defining an annular downwardly facing recess into which a neck on the shell portion is engaged by screw-threading, the shell portion having two nesting upwardly facing shoulders, one inside the neck and the other outside the neck, to receive an abutment the lower end of inner and outer walls of the assembly defining said downwardly facing recess, whereby liquid leakage between the metal base, shell and assembly as a result of deferential thermal expansion of the materials, as a result of changes in temperature is prevented.

4,251,005

TANK

Mack D. Sons, and William F. Schlegel, both of Albuquerque, New Mex., assignors to Magnum Industries, Inc., Albuquerque, New Mex.

Filed Aug. 1, 1977, Ser. No. 820,457
Int. Cl.[3] B65D *25/04*
U.S. Cl. 220—22 **13 Claims**



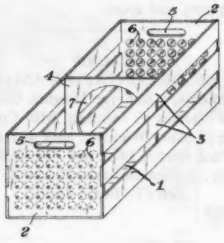
1. A tank for transporting liquids, comprising:
(a) a tank vessel for holding the liquid, having a principal longitudinal axis;
(b) baffle support means, rigidly attached to the interior walls of said tank vessel, for holding at least one baffle in fixed position within said tank vessel;
(c) at least one baffle, rigidly attached to said baffle support means, with the principal axis of said baffle being essentially parallel to the longitudinal axis of said tank vessel, said baffle being hollow and of such size that the total interior volume of said baffle or baffles is a significant portion of the interior volume of said tank vessel, said baffle having a plurality of holes in its surface, of total aperture area small in relation to the surface area of said baffle, said baffle having an outer wall each transverse cross section of which is a smooth continuous curve, convex outward along each horizontal radius of the transverse cross section of said baffle.

4,251,006

CRATE ASSEMBLY AND MATERIALS THEREFOR

Vernon J. Smith, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 973,207, Dec. 26, 1978, abandoned. This application Jan. 10, 1980, Ser. No. 110,954
Int. Cl.[3] B65D *25/04, 81/02, 6/32*
U.S. Cl. 220—22 **9 Claims**



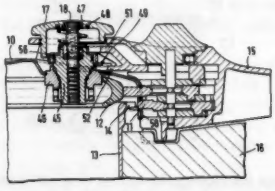
1. A receptacle or container for storing and transporting fragile, light, temperature or vibration sensitive cargo such as glassware or produce such as fruits, vegetables or other organic-based decay susceptible material comprising:
(a) an extrusion or co-extrusion foamed thermoplastic U-shaped bottom member;
(b) extrusion or co-extrusion foamed thermoplastic pieces forming spaced slats coextensive with the bottom member;
(c) injection molded foamed thermoplastic end pieces having recessed areas to receive said U-shaped bottom member and the said spaced coextensive side pieces;
(d) injection molded foamed thermoplastic divider or dividers; further characterized in that said end-pieces contain a plurality of particularly shaped apertures, said apertures being conically shaped with the base of the cone being inwardly disposed with respect to the container and the apex of the cone being outwardly disposed with respect to the container.

4,251,007

PRESSURE COOKER HAVING SAFETY MEANS

Roland Behnisch, Tübingen, Fed. Rep. of Germany, assignor to Braun & Kemmler GmbH & Co. KG, Betzingen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,897
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1979, 2901639
Int. Cl.[3] B65D *45/00*
U.S. Cl. 220—316 **15 Claims**



1. A pressure cooker, comprising a cooking container having an axis; a cover retainable on said container by a bayonet lock and having a sealing ring; a radially extending handle on said cover; and a combined valve and safety device arranged in said handle and having valve elements, safety elements and one common operating element interdependently adjusting and

actuating said valve and safety elements, said valve elements of said device

including a pressure limiting valve simultaneously forming a safety valve and one slider arranged to adjust said pressure limiting valve, said safety elements of said device including two further sliders one of which is formed as a ventilating slider and arranged for lifting of said sealing ring of said cover, whereas the other of said sliders is formed as a locking slider and arranged for mechanical locking of said cover on said container, said common operating element being formed as an operating shaft provided with an outer rotary handle member, and said device including at least one control plate engaged with said operating shaft and having at least one control groove, and a control pin connected with one of said sliders and engaging in said control groove.

4,251,008

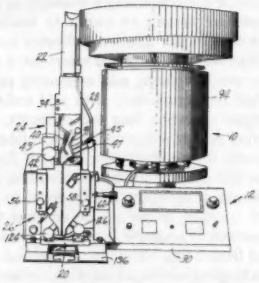
COUNTING APPARATUS

Lawrence W. Bruneau, Stow, Mass., assignor to Vibra-Feed Inc., Weston, Mass.

Filed Jul. 10, 1978, Ser. No. 923,063

Int. Cl.³ B65G *59/06*

U.S. Cl. 221—7 **11 Claims**



1. Apparatus for dispensing axially leaded workpieces one at a time and for counting the workpieces as they are being dispensed, comprising a vertical guideway for storing a quantity of uniformly oriented workpieces to be dispensed, means for adjusting the vertical guideway to adapt to different lengths of workpiece bodies and for independently adjusting for different lead wire diameters, both within predetermined ranges, means for feeding workpieces to the guideway, means for dispensing workpieces one at a time for free fall from the lower end of the guideway, and means below and independent of the dispensing means for counting the workpieces being dispensed while in free fall.

4,251,009

SECURITY DOOR ASSEMBLY FOR AN AUTOMATIC DOCUMENT DISPENSING DEVICE

Richard S. McLaughlin, 13410 Purple Sage, Dallas, Tex. 75240, and Jerome A. Moore, 1820 Plymouth Rock, Richardson, Tex. 75081

Filed Apr. 3, 1978, Ser. No. 892,748

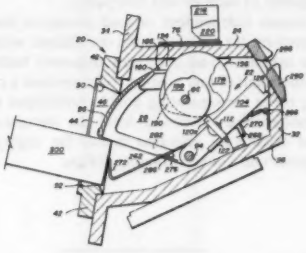
Int. Cl.³ E05G *7/00*

U.S. Cl. 221—12 **28 Claims**

1. In an automatic document dispensing device, a door assembly for a user access compartment through which documents are dispensed to the user through an opening in the user access compartment comprising:

a security door pivotally mounted by means of a shaft to the user access compartment for forceable rotation between a first position in which said security door closes the opening in the user access compartment to prevent documents from being withdrawn therefrom and a second position in which said security door is contained within the user access compartment to allow the user to gain access to the user access compartment through the opening therein for removal of documents;

means for rotating said security door between said first and second positions comprising: drive means, a door lever mounted on the shaft of said security door external of the user access compartment for imparting pivotal movement to said security door, cam means mounted to said drive means for rotation therewith and engaging said door lever to counteract the force urging said security door into said



first position, such that actuation of said drive means rotates said cam means to impart rotational motion to the shaft by means of said door lever in a direction opposite the direction of a force urging said security door into said first position, a door lever contact sensor including first means mounted to said drive means and second means mounted to said door lever, said sensor responsive to the separation of said cam means and said door lever to generate a door lever separation signal; and

means for locking said security door in said first position.

4,251,010

CERTIFICATE DISPENSER

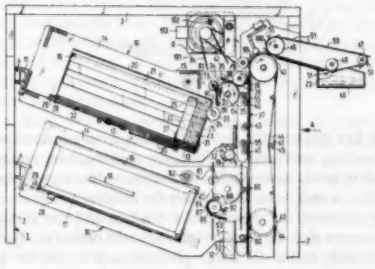
Rudolf Schmeykal, Neuenbeken, and Peter Weigel, Borchen-Doerenhagen, both of Fed. Rep. of Germany, assignors to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,592

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1977, 2717345

Int. Cl.³ B65H *5/06*

U.S. Cl. 221—93 **19 Claims**



1. A certificate dispenser of the type including a plurality of certificate magazines disposed within a dispenser housing in vertically spaced relation and containing certificates such as bank notes which are to be dispensed in a programmed fashion wherein the improvement comprises:

a plurality of individual take-up roller systems operatively associates with respective magazines, each of said roller systems comprising a take-up roller contacting the first certificate of a stack of certificates in the associated maga-

zines and operable upon rotation to remove said certificate from the magazine;

each of said roller systems further comprising feed and pressure rollers to advance a certificate received thereby through a first path;

means for selectively actuating each of said take-up rollers;

an endless belt conveyor extending along a second vertical path which is commonly adjacent and contiguous to each of said first paths of said take-up roller systems to receive certificates from said first paths and to carry said certificates along said second path, said second path being independent of each of said first paths;

and means independent of said conveyor but contiguous therewith for collecting the certificates withdrawn from the magazine, said certificate dispenser further including within each of said take-up roller systems a counter-rotating roller for separating double certificates inadvertently simultaneously removed from the associated magazine, and selectively operated means for urging certificates against said counter-rotating rollers.

4,251,011

MACHINES FOR HANDLING SEEDS

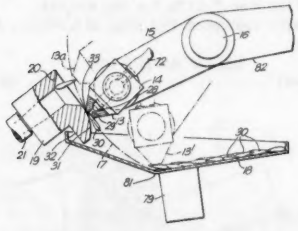
Thomas W. Hamilton, 27 Clevehurst Close, Stokes Poges, Buckinghamshire; Thomas D. Hamilton, 9 Grafton Close, Maidenhead, Berkshire, and Timothy J. Hamilton, 7 Crossways Court, Osborne Rd., Windsor, Berkshire, all of England

Filed Oct. 17, 1979, Ser. No. 85,829

Claims priority, application United Kingdom, Oct. 19, 1978, 41217/78

Int. Cl.³ A01C *7/04*

U.S. Cl. 221—211 **13 Claims**



1. In a machine for picking up seeds from a mass of seeds and depositing said seeds individually, said machine comprising a suction head, means defining a suction duct terminating in an orifice in said head, a container for holding said mass of seeds, a mechanism for moving said head to and fro along a path between a pick-up position in which said orifice is adjacent said container, and a discharge position, and means for applying suction to said duct when said head in said pick-up position and said head is moving from said pick-up position to said discharge position and for removing said suction when said head in said discharge position, the improvement comprising a wiper member and means mounting said wiper member adjacent said path of said head from said pick-up position to said discharge position, said wiper member including means defining a surface configured in relation to said head and said path whereby all seeds but one picked up by said head are wiped from said head as said head moves past said wiper member.

4,251,012

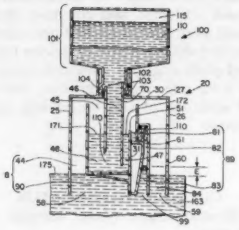
PASSIVE LIQUID DOSING DISPENSER

William A. Owens, Cincinnati, Ohio, and Alvester Williams, Jr., Jackson, Miss., assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 20, 1979, Ser. No. 58,974

Int. Cl.³ E03D *9/02*

U.S. Cl. 222—185 **7 Claims**



1. A passive dose-volume liquid solution dispenser which isolates said liquid solution from a body of liquid in which said dispenser is immersed by means of air-locks, said dispenser comprising a reservoir for containing a quantity of said liquid solution, said reservoir having an outlet in exclusive fluid communication with a liquid solution collector located at a lower elevation than said outlet of said reservoir, a measuring pocket of predetermined volume, said measuring pocket having an inlet in fluid communication with said collector, said inlet being at a higher elevation than said collector, means for filling said measuring pocket with said liquid solution from said collector in response to the level of a body of liquid being raised from a first elevation to a second elevation, means for introducing a volume of air substantially equal to the dose-volume of liquid solution to be dispensed into the upper reaches of said reservoir in response to the level of said body of liquid being raised from a first elevation to a second elevation, and means for discharging said liquid solution contained within said measuring pocket from said dispenser in response to the level of said body of liquid being lowered to said first elevation from said second elevation.

4,251,013

STORAGE VESSEL

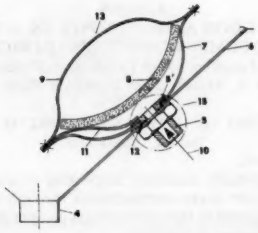
Walter Krause, Walheim, Fed. Rep. of Germany

Filed Jun. 14, 1979, Ser. No. 48,432

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1978, 2837724

Int. Cl.³ B65G *65/40*

U.S. Cl. 222—198 **16 Claims**



1. A storage vessel for flowable particulate material, comprising a housing having an inlet for introducing flowable particulate material into the housing, and an outlet for withdrawing the same from the housing, said housing including a lower portion forming a funnel provided with said outlet;

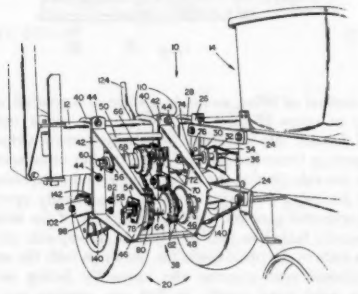
means for preventing agglomeration of the material inside the housing and including at least one expandable cushion located inside said housing and operative for expanding and collapsing so as to agitate the material contained in the housing to thereby prevent agglomeration of the material, said cushion including a first wall and a second wall fixedly connected to said first wall at edge portions thereof; expanding means for expanding said cushion including means for introducing a pressure medium into the cushion between said first and said second wall; and means for uniformly distributing the pressure medium in said cushion including a pad of the pressure medium permeable material inserted into said cushion between said first wall and said second wall thereof.

4,251,014

VARIABLY POSITIONABLE TRANSMISSION AND DRIVE ASSEMBLY FOR A PLANTER

Gordon L. Salley, Moline, and Barton L. Swales, Coal Valley, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Jul. 7, 1978, Ser. No. 922,619
Int. Cl.[3] A01C *7/08*
U.S. Cl. 222—615 **32 Claims**



1. In a planter having a transverse main frame with substantially vertical fore-and-aft faces, a plurality of planting units adjustably secured to the frame for varying row widths, a drill shaft member for operating the planting units, a variably positionable transmission and drive assembly for driving the drill shaft member comprising:

a transmission including an output connected for rotation with the drill shaft member, and an input;

bracket means for securing the transmission in a one of a plurality of transverse positions along the frame out of interfering relationship with the planting units and for selectively varying the position as the planting units are adjusted for varying row widths;

a shaft support carried by the transmission and including a first bearing member centrally positioned with respect to the fore-and-aft faces of the frame;

a wheel assembly including a wheel bracket securable to the frame and transversely adjustable thereon, a ground wheel depending from the wheel bracket, and a second bearing member carried by the bracket and centrally positioned with respect to the fore-and-aft faces of the frame in transverse alignment with the first bearing member;

a transverse countershaft supported for rotation by the first and second bearing members;

means connecting the countershaft for rotation with the ground wheel; and

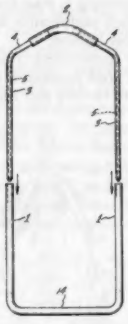
means drivingly connecting the transmission input with the countershaft.

4,251,015

COMBINED FRAME FOR TENT FIELD ENLARGING PACK

Floyd C. Gale, Jr., 5138 N. 82nd St., Scottsdale, Ariz. 85253

Filed Feb. 22, 1979, Ser. No. 13,873
Int. Cl.[2] A45F *3/10, 1/16, 4/04*
U.S. Cl. 224—154 **3 Claims**



1. A backpack frame which is convertible into a tent frame comprising:

(a) a bottom portion of the backpack frame having at least two upright tubular sections and a bottom member holding said upright tubular sections in upright, parallel relationship, said bottom portion of said backpack frame serving as the rear support for the tent in the tent frame configuration;

(b) a top portion of the backpack frame adapted to fit together in two configurations, as alternately the top of a backpack frame and as the front support of a tent frame comprising:

(1) an arcuate, hollow crown piece having openings at its opposite ends for receiving at least two other frame members;

(2) at least two hollow roof pieces each having a curved end and a straight end and having outside dimensions slightly smaller than the corresponding inside dimensions of said openings in said crown piece said roof pieces for insertion into said openings in said crown piece in at least two different configurations, alternately as a portion of the top portion of the backpack frame wherein said curved ends of said roof pieces are inserted into said crown piece, and as a portion of the front support of a tent frame wherein said straight ends are inserted into said crown piece each said roof piece having openings in either end for receiving at least two other frame members;

(3) at least two leg pieces having outside dimensions slightly smaller than the corresponding inside dimensions of said openings in said ends of said roof pieces for insertion in said openings in said ends of said roof pieces, alternately to complete said front support of said tent frame when said roof piece is inserted in said crown piece in the tent frame configuration and to be received and stored within said roof piece when said roof piece is inserted in said crown piece in the backpack frame configuration.

4,251,016

STRINGED INSTRUMENT HARNESS

James O'Rafferty, and Corna O'Rafferty, both of 9122 Sabre La., Westminster, Calif. 92683

Filed Jun. 4, 1979, Ser. No. 45,322
Int. Cl.[3] G10D *3/00*
U.S. Cl. 224—250 **6 Claims**

1. An adjustable harness with a neck retaining strap attached

thereto for holding a stringed musical instrument having a sounding board, radiused middle recess and a fret handle at one end comprising:

(a) A rectangular fixed retainer positioned on said fret handle end of said instrument to which a top hook receptacle is attached and at least four flexible straps secured in the proximity of the corners of the fixed retainer;

(b) A plurality of semirigid rectangular crossover positioning members containing at least four geometrically related slots through which said flexible straps are slideably positioned in crisscross fashion;

(c) A rectangular connecting retainer having attached thereto a bottom hook receptacle and at least four adjustable connectors to receive and retain said straps;

(d) Whereby said harness is formed by the straps extending from said fixed retainer located on said musical instrument along the sounding board and bottom surface of the instrument from said fixed retainer and crossing over through said crossover positioning members at the radiused middle recess of the instrument and proceding on the opposite side of the instrument to said connecting retainer; whereby the instrument is retained by the harness; and

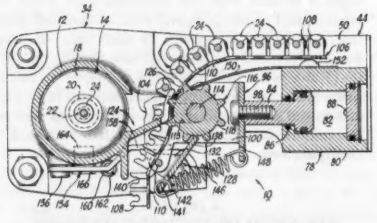
(e) An adjustable neck strap connected on one end to said top hook receptacle of the rectangular fixed retainer and on the other end to said bottom hook receptacle of the connecting retainer to position the instrument on one's person.

4,251,017

FASTENER DRIVING TOOL

Richard H. Doyle, Mt. Prospect, and Bernard W. Geist, Melrose Park, both of Ill., assignors to Duo-Fast Corporation, Franklin Park, Ill.

Filed Apr. 11, 1979, Ser. No. 29,160
Int. Cl.³ B25C 1/04
U.S. Cl. 227—8 **15 Claims**



1. A tool of the type employed for driving fasteners includes a driver for driving fasteners into a workpiece and a feed mechanism for feeding said fasteners to be driven by said driver, said tool comprising

a stop lever pivotally mounted on said tool including a first end aligned in a first position with said feed mechanism to prevent feeding of said fasteners, said lever including an abuttment member aligned with said driver and engageable thereby at the completion of a driving stroke to move said lever out of alignment with said feeding mechanism to allow feeding of a fastener.

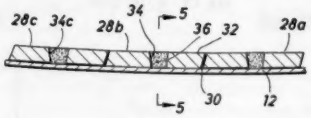
5. In combination, a tool for driving fasteners into a workpiece including a housing defining a racetrack, a feeding mechanism for feeding fasteners to be driven, and a driver reciprocally mounted in said racetrack for driving said fasteners, said driver being magnetized such that said fasteners, once fed, are held on said driver by magnetic force, said driver includes a tapered magnet embedded therein with the small end of said magnet adjacent the driving face of said driver.

4,251,018

METHOD OF MAKING A LINED CONDUIT SECTION

Charles E. Funk, Gulfport, Miss., assignor to Met-L-Parts, Inc., Gulfport, Miss.

Continuation-in-part of Ser. No. 850,285, Nov. 10, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,806
Int. Cl.³ B23K 9/23
U.S. Cl. 228—122 **1 Claim**



1. A method of lining an inside surface of a conduit with a plurality of strips of hard, relatively brittle, wear resistant material formed into elongated relatively narrow strips that have openings therethrough that have smaller cross-sectional areas on one side than on the other said method comprising the steps of disposing the inside surface in a generally upwardly facing horizontal position, placing a plurality of the strips on the upwardly facing surface in adjacent side-by-side position with the ends of the openings in the the strips with the smaller cross-sectional area adjacent the upwardly facing surface, puddling weld metal briefly in first one opening and then another remote from the first while allowing the weld metal in said first opening to cool, briefly puddling additional weld metal in said first one opening, likewise puddling weld metal in each said opening at plural brief intervals until each opening is filled to thereby maintain the temperature of the strips below that at which they will crack due to thermal stresses.

4,251,019

POTABLE CONTAINER HAVING SANITIZED STRAW

Robert R. Cone, 16420 N.E. 30th Ave., N. Miami Beach, Fla. 33160

Filed Jun. 13, 1979, Ser. No. 48,151
Int. Cl.³ B65D 83/00; A47G 19/22
U.S. Cl. 229—7 S **10 Claims**

1. A potable container, comprising,

a closure body having a top wall, a bottom wall and side walls,

a panel member for partitioning said closure body into two cavities,

said cavities comprising a permanently sealed major potable-receiving cavity and a minor non-potable receiving cavity having resealable lid means,

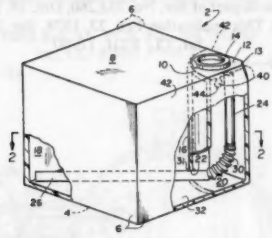
a drinking straw having its lower end disposed in said major cavity and its upper end disposed in said minor cavity,

said panel member having an aperture for receiving said straw therethrough,

means for providing a fluid-tight seal around said straw at said aperture,

said resealable lid means having means for capping the upper end of said straw when said minor cavity is sealed,

whereby potable permanently sealed in said major cavity may escape therefrom only through said straw so that



capping said straw by sealing said minor cavity prevents spillage of the potable from the container regardless of the storage position of the container.

4,251,020

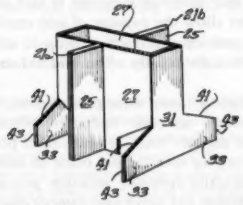
INTEGRAL CORRUGATED PARTITION

Jon M. Schwaner, Indianapolis, Ind., assignor to Inland Container Corporation, Indianapolis, Ind.

Filed Jan. 29, 1980, Ser. No. 116,535

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—15 **10 Claims**



1. An internal partition formed from a single sheet of fiberboard material which is divided by score lines and cut lines into ten panels and which defines a plurality of cells of equal dimensions when disposed within a box of rectangular cross section, which partition comprises

two pairs of first panels which are respectively hinged together along their upper edges, each pair being located along an opposite edge of said sheet, the length of each of said first panels being equal to one dimension of the cells,

said hinge lines being colinear, and said pairs of first panels being spaced apart a distance substantially equal to said length thereof,

four transverse panels hinged respectively to a lateral edge of one of said pairs of panels and extending substantially perpendicular thereto, and two main panels each of which is hinged along both of its lateral edges respectively to two of said transverse panels, said main panels being disposed parallel to said two pairs of first panels and having an upper end equal in length to said distance of separation and a lower end equal to about three times the length of said upper end.

4,251,021

LID FOR POLYGONAL CONTAINER

Walter B. Swan, 7030 W. 100th St., Chicago Ridge, Ill. 60415

Continuation-in-part of Ser. No. 959,844, Nov. 13, 1978, abandoned. This application Sep. 13, 1979, Ser. No. 75,211

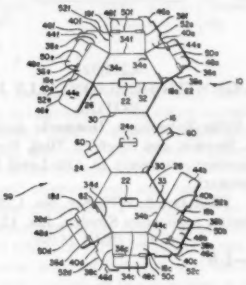
Int. Cl.³ B65D *5/12, 5/32, 13/04*

U.S. Cl. 229—43 **39 Claims**

1. A lid for a polygonal container which polygonal container has an opening at the top thereof and a selected number of sides defining the opening, said lid comprising:

a polygonal top panel having a number of polygonal sides which number is the same as the selected number of sides of the polygonal container, said polygonal top panel being of such size and shape as to correspond substantially to the size and shape of the opening at the top of the polygonal container;

a plurality of lid side panels being the same in number as the selected number of sides of the polygonal container, each said lid side panel being generally rectangular in shape and having oppositely disposed upper and lower edges and opposed side edges, and each said lid side panel being hingedly connected at the upper edge thereof to a polygonal side of said polygonal top panel, each said lid side panel being adapted for folded disposition downwardly at approximately 90° to said polygonal top panel to dispose adjacent said lid side panels in substantially contacting relationship at the opposed sides thereof when in such folded disposition at approximately 90° to said polygonal



top panel, and each said lid side panel having side panel locking means thereon for maintaining said lid side panels in said folded disposition; and

a plurality of locking panels, each of which is hingedly connected to one said opposed side of each said lid side panel, each said locking panel having an upper edge which is generally congruent with the upper edge of the adjacent said lid side panel when said plurality of lid side panels are in said folded disposition at approximately 90° to said polygonal top panel, each said locking panel having a mating locking means thereon for mating with said locking means on said corresponding adjacent said side panel for engaging therewith to secure said lid side panels in said folded disposition at approximately 90° to said polygonal top panel and to maintain said opposed side edges of said lid side panels in said substantially contacting relationship,

whereby a lid having a securely fixed polygonal top panel and lid side panels for generally fitting over and closing the open end of the polygonal container is attained.

4,251,022

PACK, IN PARTICULAR CUBOID CIGARETTE PACK

Heinz Focke, Verden, Fed. Rep. of Germany, assignor to Focke & Co., Verden, Fed. Rep. of Germany

Filed Sep. 10, 1979, Ser. No. 74,030

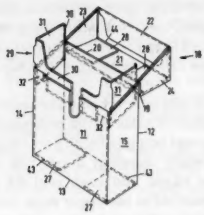
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1978, 2844444

Int. Cl.³ B65D *5/34*

U.S. Cl. 229—44 CB **9 Claims**

1. A pack, especially a cuboid cigarette pack, of stiff paper, cardboard or the like, with flaps of differing transverse and/or longitudinal size, which flaps are folded over one another in several layers and may or may not be bonded to one another, wherein all the flaps concerned (**16**, **17**; **25**, **26**; **27**, **28**; **31**) are

constructed of the same width and/or length and any lesser size of certain flaps (27, 28, 31) required by the construction of



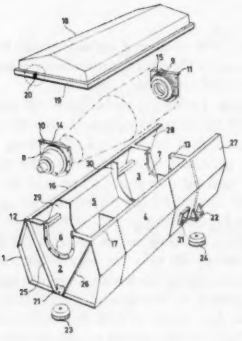
the pack is achieved by permanent moulding of these resulting from embossing or the like.

4,251,023

CENTRIFUGE WITH HORIZONTALLY JOURNALLED ROTOR

Per Hohne, Valby-Kobenhavn, Denmark; Andreas Kontarinis, Sodertalje, Sweden, and Siegfried Titel, Neu Börnsen, Fed. Rep. of Germany, assignors to Alfa-Laval Separation A/S, Soborg, Denmark

Filed Jan. 8, 1979, Ser. No. 1,756
Claims priority, application Sweden, Jan. 12, 1978, 7800348
Int. Cl.³ B04B *15/00*
U.S. Cl. 233—1 R **6 Claims**



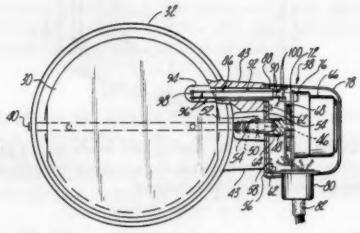
1. In a centrifugal separator, the combination of a horizontally journalled centrifugal rotor having support bearings at opposite end portions thereof, and a frame including two end wall elements supporting said support bearings, respectively, the frame also including longitudinal elements extending on each side of the rotor and fixing the end wall elements relative to each other along their entire side edges, said end wall elements having upwardly opening notches, said support bearings being substantially completely submerged in said notches and having supporting contact with the bottoms of said notches, said support bearings having flanges parallel with the end wall elements and coacting therewith to fix the support bearings against endwise movement relative to the frame, the bottoms of the notches in the end wall elements having the form of a half-circle, each support bearing including a circular-cylindrical part resting on the bottom of the notch in the corresponding end wall element, each said flange being firmly joined to a said circular-cylindrical part.

4,251,024

AUTOMATIC VENT DAMPER

Emanuel Feinberg, Southfield, Mich., assignor to Paragon Resources, Inc., Warren, Mich.

Continuation-in-part of Ser. No. 733,260, Oct. 18, 1976, Pat. No. 4,102,629. This application Feb. 23, 1978, Ser. No. 880,611
Int. Cl.³ F23L *11/00*
U.S. Cl. 236—1 G **27 Claims**



1. An automatic vent damper device for a combustion heating device of the type having a burner disposed in a combustion chamber and an exhaust vent ducting means for exhausting the products of combustion from said combustion chamber, said automatic vent damper device comprising:

a damper blade movably mounted in said vent ducting and adapted to allow the passage of said combustion gases in an open position and upon moving to a closed position, adapted to substantially close said exhaust vent ducting means;

a damper blade actuator arrangement comprising an electrically-operated actuator operative when energized to move said damper blade to said closed position;

bias means urging said damper blade to said open position, said electrically-operated actuator acting to overcome said bias means and move said damper blade to said closed position;

burner control circuit means energizing said electrically-operated actuator when said burner operation is discontinued;

a fusible thermal link disposed within said vent ducting means and means locating said fusible link in said duct means so as to come into direct contact with the products of combustion passing through said ducting means with said damper blade in said closed position, said means including a cut-out opening formed in said damper blade extending in from the periphery thereof and wherein said fusible link assembly is mounted in said ducting means so as to lie in said cut-out with said damper blade in said closed position, said fusible link comprising an electrically-conductive element which melts at a predetermined temperature in said vent ducting means corresponding to the operation of said burner with said damper blade in said closed position;

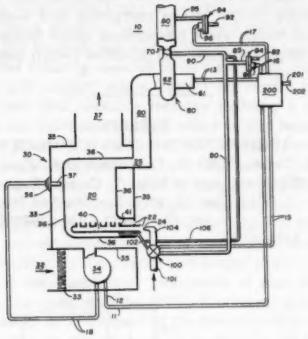
means for causing deenergization of said electrically-operated actuator upon melting of said fusible thermal link, said means including circuit means placing said fusible link in series with said burner control circuit means energizing said electrically-operated actuator whereby said automatic vent damper is failsafe in that in the event of burner operation with said electrically-operated actuator energized due to system malfunction, said electrically-operated actuator is deenergized by melting of said fusible link and interruption in said power of said electrically-operated actuator, allowing said damper blade to be opened by said bias means.

4,251,025

FURNACE CONTROL USING INDUCED DRAFT BLOWER AND EXHAUST STACK FLOW RATE SENSING

Ulrich Bonne; Lorne W. Nelson, and Ralph H. Torborg, all of Hennepin, Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jul. 12, 1979, Ser. No. 57,051
Int. Cl.[3] F23N 1/00, 1/08
U.S. Cl. 236—14 12 Claims



1. In a heating system having a combustion chamber with a fuel burner and an exhaust stack, the improvement comprising:

a blower connected to the exhaust stack for inducing a draft in the exhaust stack and drawing air into the combustion chamber;

means adapted to be mounted in the exhaust stack for forming a flow restriction in the exhaust stack on one side of the blower;

fuel supply control means adapted to control the supply of fuel to the burner responsive to a control signal representative of mass flow in the exhaust stack to supply fuel at a rate proportional to the magnitude of the control signal;

means for sensing a quantity representative of mass flow in the exhaust stack through the flow restriction means and for communicating said sensed quantity as a control signal to the fuel supply control means;

blower control means adapted for connection to the blower for starting and stopping operation of the blower;

wherein the fuel is a gas, said fuel supply control means is responsive to a gas pressure signal and said means for sensing and communicating a sensed quantity as a control signal comprises a conduit which connects the fuel supply control means to a region of the exhaust stack on one side of the flow restriction means and communicates the gas pressure in this region to the fuel supply control means;

wherein the conduit is connected to a region of the exhaust stack which is on the upstream side of the flow restriction means; and

further comprising means for introducing a small flow of flushing gas into said conduit at a point along its length, said flushing gas being at a pressure higher than the pressure communicated by said conduit so as to prevent any substantial diffusion of combustion products from said exhaust stack through said conduit.

4,251,026

ATTIC VENTILATION CONTROL SYSTEM

Howell T. Siegel; Jeffrey I. Siegel, both of Fort Worth, and Richard E. Shank, Mineral Wells, all of Tex., assignors to Butler Ventamatic Corp., Mineral Wells, Tex.

Filed Dec. 5, 1979, Ser. No. 966,651
Int. Cl.[3] F24F 7/02
U.S. Cl. 236—49 8 Claims

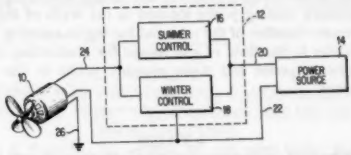
5. Apparatus for ventilating a closed area subject to a broad range of summer and winter temperature conditions to evacuate hot air in the closed area to cool the closed area, and to evacuate moisture-laden cold air in the closed area to avoid ice and moisture accumulation in the closed area, the apparatus comprising:

an electrically powered fan means for drawing air from within a closed area to the outside of a closed area;

an electrical power source for providing electrical power to said fan means to operate same;

hot air evacuation control means for controlling the evacuation of hot air from said closed area, said hot air evacuation control means comprising a first thermostatic control means for electrically coupling said electrical power source to said fan means without periodic interruption when the temperature in the closed area exceeds a first predetermined temperature;

moisture-laden cold air evacuation control means for controlling the evacuation of cold air from said closed area, said cold air evacuation control means comprising a second thermostatic control means for periodically electrically coupling said electrical power source to said fan means only when the temperature falls below a second predetermined temperature, said second thermostatic control means comprising a thermostat, an electrically-powered percentage timing means for repetitively timing a preselected time interval in a predetermined time period, said thermostat coupled between said electrical power source and said percentage timing means to provide electrical power from said electrical power source to said percentage timing means only when the temperature falls below said second predetermined temperature, and means for coupling said percentage timing means to said fan means to electrically couple said fan means to said electrical power source during said preselected time interval.

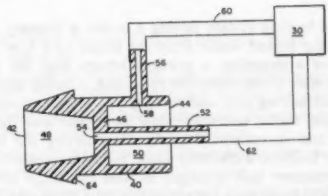


4,251,027

VARIABLE VOLUME CONTROL ASSEMBLY

Marv L. Dehart, Mesquite; M. Leon Kloostra, Rowlett, and Harold E. Straub, Garland, all of Tex., assignors to Environmental Elements Corporation, Baltimore, Md.

Continuation-in-part of Ser. No. 849,503, Nov. 7, 1977, Pat. No. 4,196,849. This application Feb. 15, 1980, Ser. No. 122,079
Int. Cl.[3] F24F 7/04
U.S. Cl. 236—49 4 Claims



1. An improved variable volume control assembly for controlling the flow of conditioned air into a zone of the type comprising:

a box having an inlet in one end for receiving conditioned air from a source of conditioned air and an outlet in the other end for delivering conditioned air to the zone;

an inlet plenum for connecting the box with ducting from the source;

damper means located within the box for controlling the flow of air through the box, the damper means dividing the box into an expansion chamber and an outlet chamber;

air flow sensing means for sensing the flow of air through the box;

motor means located externally of the box for controlling the opening and closing of the damper means;

control means located externally of the box and responsive to the temperature in the zone and the flow of conditioned air through the box for controlling the operation of the motor means;

wherein the improvement comprises the air flow sensing means comprising a tube having an upstream end and a downstream end, a wall dividing the tube into an upstream chamber and a downstream chamber, a total pressure sensing probe located in the tube and having its opening in the center of the wall dividing the tube into the upstream and downstream chambers and facing upstream, a static pressure sensing probe located in the walls of the downstream chamber of the tube and having its opening perpendicular to the flow of gas, means for connecting the total pressure probe and static pressure probe to the control means.

4,251,028

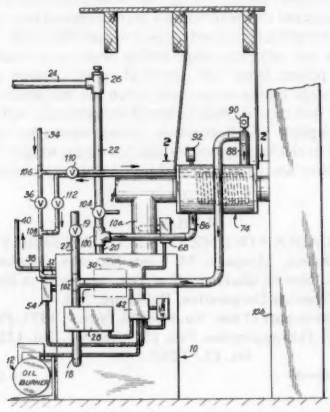
ENERGY RECOVERY SYSTEM FOR BOILER AND DOMESTIC WATER

Richard Nicolai, 2226 First Ave., Ronkonkoma, N.Y. 11779, and Kenneth Schlaepfer, Farmingville, N.Y., assignors to Richard Nicolai, Ronkonkoma, N.Y.

Filed Sep. 25, 1978, Ser. No. 945,682

Int. Cl.[3] F24D *3/00*; F22B *33/00*

U.S. Cl. 237—8 R **13 Claims**



1. In a heating system having a boiler; a primary feed pipe for feeding heated water from the boiler to a heat radiating system of a premises, a primary return pipe for returning cooled water to the boiler for reheating; a boiler domestic hot water coil having inlet and outlet pipes, a water circulator for circulating boiler water through the boiler and the heating system, and an exhaust duct for transporting the flue gases from the boiler to a chimney stack, the improvement comprising a preheater unit arranged in heat exchange relationship with said exhaust duct for extracting heat from said flue gases and recovering the same for heating said preheater unit, said preheater unit having first flow path means in fluid flow communication with said primary feed and return pipes to cause at least a portion of the water heated in said boiler to flow therethrough and be heated therein; and a second flow path means in fluid flow communication with said boiler domestic hot water coil and the hot and cold domestic water lines of the premises to cause domestic cold water to be preheated in said preheater unit prior to feeding the domestic water to said boiler domestic hot water coil; and electrical control means which can be set for winter and summer operations for controlling the operation of a boiler burner and the water circulator to provide efficient heating of the premises, comprising a source of electrical energy, a thermostat, boiler water temperature means, and selection switch means interconnected with each other and with said water circulator, said thermostat being arranged to energize said water circulator when said selection switch means is set for winter operation, said boiler water temperature switch means energizing said water circulator when the boiler water temperature drops below a predetermined temperature and said selection switch means is set for summer operation.

4,251,029

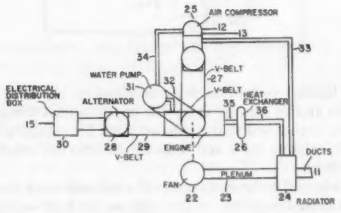
UNDERGROUND SERVICE MODULE

Miles T. Carson, 2390 W. Dartmouth at S. Zuni, Englewood, Colo. 80110, assignor to Miles T. Carson, Englewood, Colo.

Filed Dec. 12, 1978, Ser. No. 968,790

Int. Cl.[3] B60H *1/04*

U.S. Cl. 237—12.1 **11 Claims**



1. A service module, comprising:

an internal combustion engine;

an air compressor driven by said internal combustion engine;

a framework for supporting said internal combustion engine and said air compressor wherein said framework is fabricated from tubular members interconnected to form a pressure vessel; and

means to couple high-pressure air from said air compressor to said framework pressure vessel.

4,251,030

RAIL CLIP ASSEMBLIES

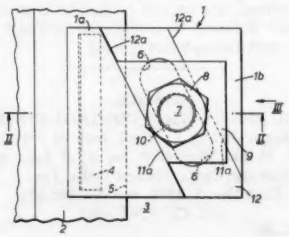
Ian M. Marchant, Ashtead, England, assignor to Kins Developments Limited, Epsom, England

Filed Apr. 18, 1978, Ser. No. 897,566

Claims priority, application United Kingdom, Apr. 19, 1977, 16254/77

Int. Cl.[3] E01B *9/46*

U.S. Cl. 238—347 **3 Claims**



1. A rail clip assembly comprising:

a body for overlying a portion of a rail and for overlying an adjacent portion of a rail support means, said body defining a first surface for abutment with a lateral face of the rail, a second surface facing away from said first surface and an aperture for receiving means for securing said body to the rail support means, said aperture being elongate in a direction inclined at an acute angle to the direction of extent of the rail; said means for securing said body to the rail support means including a first securing member for overlying said body and having an aperture therein for alignment with said aperture in said body and for receiving a second securing member which extends therethrough and through said elongate aperture in said body, said second securing member in its position of use being fixed to said support means against movement relative thereto, said first securing member defining a surface which in use abuts said second surface of said body in all positions of said body relative to said securing means for transmitting laterally directed forces applied by the rail to said body from said body to said first securing member, and from the latter to said second securing member and to said rail support means, said surface of said first securing member and said second surface of said body extending in a plane inclined to the direction of extent of the rail and parallel to the direction of elongation of said elongate aperture, the upper surfaces of said first securing member being parallel with the part of the lower surface of said body bearing on the rail support surface for all relative positions of said body and said first securing member, said second surface of said body extending at an acute angle to a vertical plane through the axis of elongation of said aperture and a third surface on said body extending in a plane parallel to the axis of elongation of said aperture therein, said second and third surfaces being symmetrical about the axis of elongation of said aperture, said first securing member having a surface corresponding to said third surface of the body and for abutment therewith.

4,251,031

VIBRATORY ATOMIZER

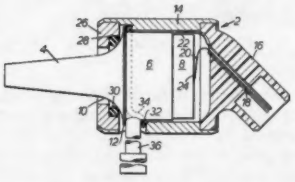
Barrie J. Martin, Shenfield; Dennis Harvey, Tilbury, and Peter Stanwell, Wansteed, all of England, assignors to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jun. 22, 1979, Ser. No. 51,186

Claims priority, application United Kingdom, Jul. 11, 1978, 29478/78

Int. Cl.³ B05D *3/14*

U.S. Cl. 239—102 **12 Claims**



1. A vibratory atomising arrangement for atomising a liquid, which comprises:

(a) an atomiser including a body portion determining a longitudinal direction and equipped with means for generating vibrations of the body portion in this longitudinal direction, and a decreasing-diameter resonant vibration-amplifier horn whose larger-diameter base joins the body portion in a nodal plane of the thus generated longitudinal vibrations, the atomiser being formed with a flange-like shoulder arranged in said nodal plane and facing away from the smaller-diameter tip of the horn, and the horn having an internal longitudinal passage for the liquid to be atomised, terminating in a nozzle at the tip of the horn, and

(b) means for supporting and locating the atomiser in a supporting structure, the supporting means including (1) a resilient annular supporting and centering member which is interposed between the horn and such supporting structure and engages the outer surface of the horn in a zone which is in the vicinity of said nodal plane, and in which said surface intersects a nodal zone of the radial vibrations which arise in the atomiser simultaneously with said longitudinal vibrations, and (2) a further resilient annular supporting member which is interposed between said shoulder and the supporting structure to exert upon the atomiser an axial force directed towards said supporting and centering member and thus to clamp the atomiser longitudinally between said further supporting member and said supporting and centering member while permitting relatively unrestricted radial movement of the shoulder surface.

4,251,032

APPLIANCE FOR DISCHARGING GASEOUS, LIQUID OR PASTY PRODUCT, AND PROCESS OF ITS MANUFACTURE

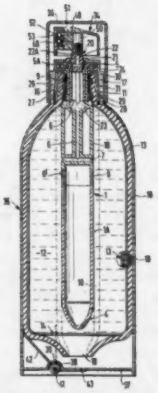
Winfried J. Werding, Grand-Rue 10, CH 1009 Pully, Switzerland

Continuation of Ser. No. 843,024, Oct. 17, 1977. This application Oct. 12, 1979, Ser. No. 84,506

Claims priority, application Switzerland, Oct. 21, 1976, 13337/76; Feb. 3, 1977, 1519/77; Apr. 12, 1977, 4541/77; Aug. 2, 1977, 9607/77

Int. Cl.³ B05B *11/02*

U.S. Cl. 239—323 **35 Claims**



1. An appliance for discharging gaseous, liquid or pasty product comprising:

an inner pouch of deformable non-expandible material for holding said product, said pouch having an outlet end containing an orifice, and an opposite closed end constituted by an integral wall of said pouch;

an outer enveloping element of caoutchouc-type macromolecular material about said inner pouch;

a product outlet means associated with said outlet end of said pouch;

a valve device for controlling the discharge of product from said pouch through said outlet means and being disposed between the latter and said outlet end of said pouch;

an elongated rigid core of constant length located in the interior of said pouch and having a first and second end;

said valve device being mounted on said first end of said core;

said second end of said core being at all times close to said closed end of said pouch;

the cross-sectional area of said core being at least 40% larger than the internal cross-sectional area, taken in the same plane, of said outer enveloping element when the latter is in unexpanded condition, whereby said outer enveloping element in assembled condition surrounding said pouch containing said core, is expanded radially away from the central longitudinal axis of said core while remaining substantially unstretched in axial direction; and

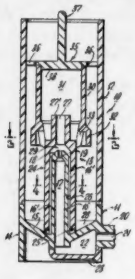
the maximum fillable volume available in said pouch being completely unfolded without expansion of its walls constituting the maximum limit of expansion of said outer enveloping element, said maximum limit being within the range of linear stretching of said caoutchouc-type macromolecular material.

4,251,033

MIST GENERATING STRUCTURE AND MOLDING APPARATUS THEREFOR

Michael Rich, Newtown, and Konrad Eldracher, Startford, both of Conn., assignors to Eastfield Corporation, Darien, Conn.

Filed Jun. 12, 1978, Ser. No. 914,885
Int. Cl.³ A61M *11/06*
U.S. Cl. 239—338 **7 Claims**



1. A mist generator comprising means for producing a mist including a nozzle and a sleeve surrounding said nozzle, means forming at least one channel between said nozzle and said sleeve for aspirating a liquid when compressed air flows through said nozzle to produce a mist emanating from said sleeve, a tubular member defining a chamber above said sleeve, said sleeve extending into said chamber for discharging said mist at a point within said chamber, a plurality of spaced, radially disposed members each fixedly secured at one end to the upper portion of said sleeve and extending upwardly and outwardly therefrom, the other end of the last said members being fixedly attached to the lower portion of said tubular member and forming a plurality of outwardly and rearwardly directed openings for the discharge of said mist from said chamber, means closing the other end of said tubular member, and a housing surrounding said chamber and mist producing means and including an outlet for discharging said mist.

4,251,034

SYSTEM FOR RECLAIMING PLASTIC FROM METAL PLATED PLASTIC SCRAP

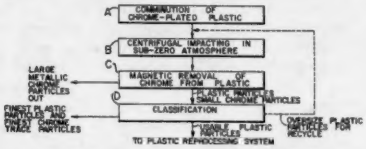
Ernst F. Corr, Madison, and Robert J. Munns, Glastonbury, both of Conn., assignors to Entoleter, Inc., Hamden, Conn.

Filed Jan. 15, 1979, Ser. No. 3,417
Int. Cl.³ C02C *21/00*
U.S. Cl. 241—14 **10 Claims**

1. A method for processing plastic materials plated with magnetic metals to obtain desired metal values or plastic, comprising:

a. comminuting said plastic materials plated with magnetic metals,

b. centrifugally impacting said comminuted materials in a cryogenic fluid thereby producing a mixture of particles of magnetic metal dislodged from said plastic and particles of said plastic substantially free of said plating,


COMMUTION OF CHROME-PLATED PLASTIC
CENTRIFUGAL IMPACTING IN SUB-ZERO ATMOSPHERE
LARGE METALLIC CHROME PARTICLES OUT
MAGNETIC REMOVAL OF CHROME FROM PLASTIC
PLASTIC PARTICLES & SMALL CHROME PARTICLES
FINEST PLASTIC PARTICLES AND FINEST CHROME YIELD PARTICLES
CLASSIFICATION
OVERSIZE PLASTIC PARTICLES FOR RECYCLE
USABLE PLASTIC PARTICLES
TO PLASTIC REPROCESSING SYSTEM

c. magnetically removing most of said dislodged magnetic metal particles from said mixture, and

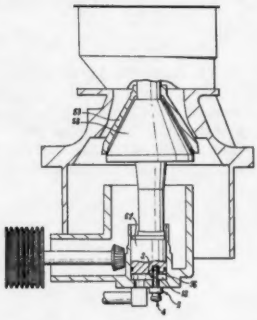
d. classifying said mixture from which said metallic particles have been extracted to obtain at least one fraction of essentially metal-free reclaimed plastic particles of a predetermined size.

4,251,035

POSITION INDICATOR

Ian M. Chatwin, 107 Thomas St., and Roger H. S. Riordan, 15 Regent St., both of East Brighton, Victoria, Australia

Filed May 7, 1979, Ser. No. 36,513
Int. Cl.³ B02C *25/00*
U.S. Cl. 241—37 **16 Claims**



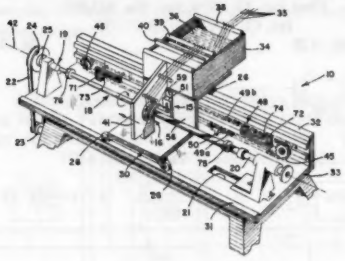
1. In a gyratory crusher of the kind having a mantle mounted for adjustment relative to a concave and a hydraulic piston-cylinder assembly for controlling that adjustment, the piston of said assembly being connected to said mantle for movement therewith, the improvement comprising: a position indicator having a probe body which is secured to a wall of the cylinder of said assembly to project into the interior of said cylinder, a variable capacitor connected to said body and being responsive to movement of said piston to adopt a capacitance value which is characteristic of each position of said piston relative to said cylinder, a reference capacitor having a fixed capacitance value, circuit means operable to compare the respective capacitance values of said variable and fixed capacitors and to generate a signal characteristic of the ratio of the two said capacitance values, said signal varying with changes in said ratio according to changes in the capacitance value of said variable capacitor and thereby providing an indication of the position of said mantle relative to a preselected datum.

4,251,036

FILAMENT WINDING APPARATUS FOR MAKING FIBER REINFORCED PLASTIC MEMBERS

Philippe H. McLain, Gilbert, S.C., assignor to Shakespeare Company, Columbia, S.C.

Filed Feb. 16, 1979, Ser. No. 12,821
Int. Cl.³ B65H *81/08, 54/30*
U.S. Cl. 242—7.21 **12 Claims**



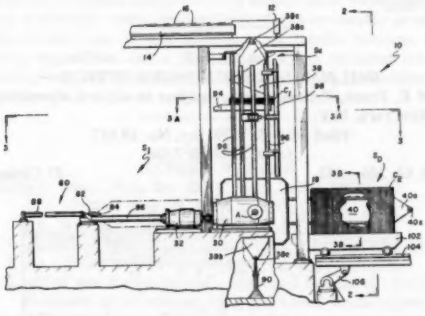
1. In an apparatus for making fiber reinforced plastic members, said apparatus having two relatively movable winding elements, one element being a mandrel and the other element being a winding head, means to effect relative rotational movement between said winding elements and means to effect relative longitudinal movement between said winding elements, said apparatus having a frame, one winding element supported on said frame, a trolley mounted on said frame for reciprocating movement thereon, the other winding element carried on said trolley, dog means carried on said trolley selectively connected to said drive means and means to release said dog means from said drive means at selected locations to provide a dwell during which said relative rotational movement continues while said relative longitudinal movement is arrested whereby to anchor the reinforcing strands as they are wound onto the mandrel and subsequently to position said dog means for subsequent reengagement by said drive means.

4,251,037

COIL FORMING APPARATUS WITH AXIALLY ADJUSTABLE MANDRELS

Melicher Puchovsky, Dudley, Mass., assignor to Morgan Construction Company, Worcester, Mass.

Filed Nov. 13, 1979, Ser. No. 93,830
Int. Cl.³ B21C *47/00*
U.S. Cl. 242—81 **11 Claims**



1. In a rolling mill wherein product rings are accumulated in coil form around mandrels mounted on a rotatable hub, with means for rotatably indexing the hub to move the mandrels between a collecting station at which the mandrels protrude vertically from the hub and the rings are axially received thereon from an overlying delivery device, and a discharge station at one side of the hub at which the mandrels protrude horizontally to accommodate axial removal of coils from the mandrels, the improvement comprising:

said mandrels being axially adjustable relative to said hub, each mandrel being provided with oppositely disposed ends adapted to receive rings axially from said delivery device; and,

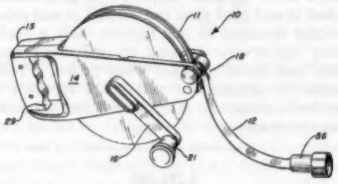
means for axially withdrawing each mandrel across the rotational axis of said hub from said discharge station to an intermediate station on the opposite side of said hub.

4,251,038

HOSE REEL

John L. Gename, Naperville, Ill., assignor to Popeil Brothers, Inc., Chicago, Ill.

Filed Apr. 3, 1978, Ser. No. 892,896
Int. Cl.³ B65H *75/40*
U.S. Cl. 242—86 **27 Claims**



1. A hose reel comprising, in combination,

a body having two elongate sides defining an uninterrupted top opening reel pocket laterally therebetween,

a reel having two opposed parallel side plates spaced to nestingly receive a single width of hose and a central hub,

a crank,

means for securing the crank from a position adjacent one body side into the reel hub thereby securing the reel in the body reel pocket,

a hand grip portion at one end of the body closing one end portion of the reel pocket,

hose guide means at the end of the body remote from the hand grip and closing the other end portion of the reel pocket with a crank securing means therebetween,

said hand grip, crank securing means, and hose guide means being all along a substantially straight line,

the axis of grasp of the hand grip being substantially perpendicular to said straight line,

said hose guide means including further means for disengaging for unwinding and re-engaging the same for rewinding the hose and expressing fluid therefrom,

whereby a hose may be wound around the reel hub and guided by the guide means, and readily unwound by pulling the same along an axis the tension force of which is substantially coaxial with the axis of the hand grip, crank securing means, and the hose guide means.

4,251,039

ROLLING DOOR CURTAIN MOUNTING APPARATUS

Douglas Howard, 10256 S. Choctaw, Baton Rouge, La. 70815

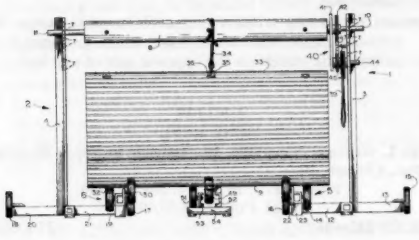
Filed Jul. 30, 1979, Ser. No. 61,710
Int. Cl.³ B65H *17/02, 75/40*
U.S. Cl. 242—86.52 **4 Claims**

1. An apparatus for mounting a rolling door curtain on a barrel assembly having an axle which will be attached in position about an opening that said door can close, which comprises:

(a) movable carriers having parallel spaced apart vertical members having aligned openings to which said barrel assembly is rotatably attachable;

(b) rolling door curtain support brace assembly attached to each of said movable carriers below a position where said barrel assembly is attached; and

(c) drive means for rotating said barrel assembly on said movable carriers, which said drive means is attached to said axle of said barrel assembly, said drive means comprising a head plate and sprocket fixedly attached to said



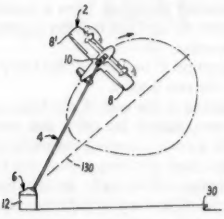
axle, a dentil sprocket support shaft perpendicularly attached to said head plate and parallel to said axle, a dentil sprocket mounted on said support shaft, a pocket chain pulley operatively mounted on said dentil sprocket to rotate said dentil sprocket when pulled, a roller chain operatively attached to said dentil sprocket and said sprocket to cause said sprocket to rotate when said dentil sprocket rotates.

4,251,040

WIND DRIVEN APPARATUS FOR POWER GENERATION

Miles L. Loyd, 4227 Colgate Way, Livermore, Calif. 94550

Filed Dec. 11, 1978, Ser. No. 968,503
Int. Cl.³ B64C *31/06*; F03D *5/00*
U.S. Cl. 244—154 **13 Claims**



1. Wind driven apparatus for the production of power at a ground location comprising

vehicle means responsive to the motion of surrounding air for generating lift and maintaining a stable airborne orientation, said orientation comprising periodic oscillations through the air;

means carried by said vehicle and responsive to the relative motion between the air and said oscillating vehicle means for extracting mechanical power therefrom;

means carried by said vehicle for converting said extracted power to reciprocating motion; and

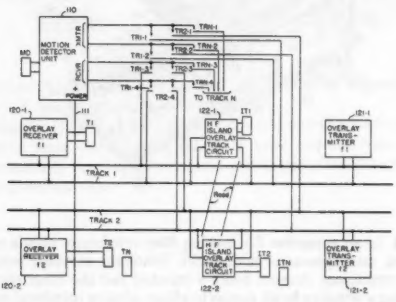
tether means linking said vehicle means to a ground location and defining the maximum radius of said oscillations, said tether means including for both bearing the entire tensile stress imparted by said vehicle means on said tether means and for transmitting said reciprocating motion along said tether means to said ground location said means for bearing said tensile stress and for transmitting said reciprocating motion comprising a plurality of members connected between said vehicle means and said ground location and mounted for reciprocation along said tether means, each said reciprocating member having a phase relation with respect to said reciprocating motion which is different from that of any other said reciprocating member.

4,251,041

MULTIPLEXING MEANS FOR MOTION DETECTORS AT GRADE CROSSINGS

Frank A. Svet, Churchville, N.Y., assignor to General Signal Corporation, Stamford, Conn.

Filed Jul. 12, 1978, Ser. No. 923,851
Int. Cl.³ B61L *1/02, 21/06*
U.S. Cl. 246—128 **26 Claims**



1. A control circuit for a highway crossing warning device at a grade crossing between a railroad track and a highway and comprising in combination:

(a) first and second track circuits associated with respective track sections near the grade crossing with each track circuit being responsive to the presence of a train within the limits of the track section monitored by the track circuit;

(b) first and second control means associated with said first and second track circuits, respectively, with each individually actuated in response to the entry of a train within the limits of the track section monitored by said first and second track circuits, respectively;

(c) a single motion detection unit associated with said track circuits at the grade crossing; and

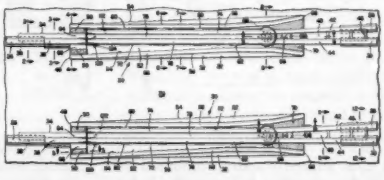
(d) circuit means responsive to the actuation of one of said first and second control means for coupling said single motion detector unit to the track section whose track circuit has responded to the presence of a train whereby said motion detector unit can provide signals responsive to the detection of motion within the entered track section.

4,251,042

RAILWAY DOUBLE TONGUE SWITCH

Earl E. Frank, Tallman, N.Y., assignor to Abex Corporation, New York, N.Y.

Filed Mar. 5, 1979, Ser. No. 19,012
Int. Cl.³ E01B *7/04*
U.S. Cl. 246—443 **21 Claims**



1. A railway tongue switch including a pair of discrete

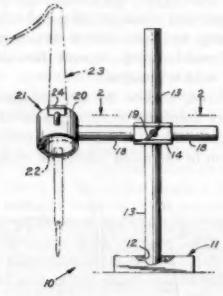
switch assemblies each comprising a cast body having a heel end, a point end, a first rail segment at the point end, second and third rail segments at the heel end and a tongue floor; and a switch tongue pivotally mounted on the tongue floor for sliding movement between extreme traffic-carrying positions, characterized by the switch tongue having a first full-width railhead aligned with the first and second rail segments in one traffic-carrying position and a second full-width railhead aligned with the first and third rail segments in the other traffic-carrying position; and by the switch bodies being identical and interchangeable.

4,251,043

ADJUSTABLE SOLDERING IRON HOLDER

Ronny Horner, Farrington Apts., Apt. 215, 2120 Lombardi Dr., Clarksville, Ind. 41730

Filed Mar. 30, 1979, Ser. No. 25,396
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—117.6 **1 Claim**



1. An adjustable soldering iron holder, comprising, in combination, a rectangular base, a post secured in said base supporting an adapter, an arm received in said adapter, and a split-sleeve secured to said arm, for removably receiving a handle portion of a soldering iron; said post being fixedly secured, at one end, in a vertical opening included in said base, said adapter having a first opening therethrough, which slidably and rotatably receives said post, and a first thumb screw selectively securing said adapter to said post; a second opening through said adapter being at right angles to said first opening, said second opening slidably and rotatably receiving said arm, and a second thumb screw selectively securing said arm to said adapter; one end of said arm fixedly secured to an outer periphery of said split-sleeve; and said split-sleeve removably receiving various sizes of said soldering iron handle portions, by being expandible, and a third thumb screw threaded transversely into said split-sleeve selectively securing said soldering iron handle portion to said split-sleeve.

4,251,044

OXYGEN WALKER

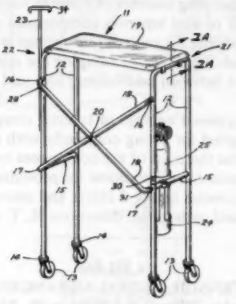
Kathy L. Olson, P.O. Box 231 C, Britt, Minn. 55710

Filed Aug. 30, 1979, Ser. No. 71,743
Int. Cl.³ F16M *11/38*
U.S. Cl. 248—166 **5 Claims**

1. An oxygen walker comprising:

a pair of side frames disposed apart and formed of inverted U-shaped metal tubes having horizontal brace members adapted for supporting a source of oxygen, each of the side frames having a pair of vertically spaced apart connector means on the same side, with the connector means of one side frame being horizontally aligned with the connector means of the other side frame, said connector means comprising lower tubular projections in substantial alignment with the horizontal brace members and upper cylindrical projections;

a pair of U-shaped tubular members, pivotably secured for relative rotational movement about their center portions and including one end adapted to be pivotably received in the tubular connectors on said side frames and adapted to



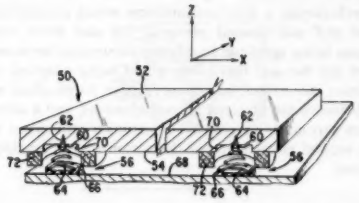
be removably disposed over the cylindrical connectors on said side frames, whereby disengagement of the corresponding ends of said members from said cylindrical connectors, allows for folding of said side frames toward one another and unfolding and engagement of the corresponding ends of said members with said cylindrical projections provides a rigid structure.

4,251,045

METHOD AND APPARATUS FOR REDUCING UNDESIRED TRANSMISSION OF ACOUSTIC ENERGY FROM A LOUDSPEAKER CABINET AND FOR ACOUSTICALLY ISOLATING HIGH FIDELITY SETS THEREFROM

George M. Meyerle, Lakeview Dr. Candlewood Orchards, Brookfield, Conn. 06804

Continuation of Ser. No. 740,136, Nov. 8, 1976, abandoned. This application Feb. 12, 1979, Ser. No. 11,069
Int. Cl.³ F16M *13/00*; H05K *5/00*
U.S. Cl. 248—619 **11 Claims**



1. Apparatus for reducing the acoustic interaction between a component of a sound reproducing system contained in a cabinet and the structure of a room in a building in which said cabinet containing said component is located comprising:

a platform adapted to have the cabinet placed thereon;

a predetermined number of similar tapering compression springs each having smaller-diameter and larger-diameter ends;

said compression springs each having one end thereof connected to said platform;

said compression spring extending down below the bottom of said platform for acting in parallel support relationship;

the lower ends of said springs having means thereon for resting upon a supporting surface in the room, said means being adapted for preventing marring or scratching of the

supporting surface upon which said suspension apparatus is placed;

said springs providing resilient spring action in all three orthogonal directions X, Y and Z between said platform and said supporting surface, said direction Z being perpendicular to said platform and said directions X and Y being perpendicular to each other and both being parallel with said platform;

an annular damping member of resilient foam material encircling each of said tapering compression springs for providing damping for each of said springs in all three of said orthogonal directions for damping the relative vibrational movement between said cabinet and said supporting surface; and

said predetermined number of tapered compression springs being adapted for acting conjointly with the mass of said cabinet plus the mass of the component contained therein plus the mass of said platform for providing damped resonant frequencies below 8 Hertz and above 2 Hertz in all three of said orthogonal directions X, Y and Z.

4,251,046

EXTENSIBLE BEAM ARRANGEMENT

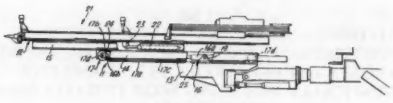
Stanley Walmsley, Wigan, and William R. Aldridge, Hindley, both of England, assignors to Coal Industry (Patents) Limited, London, England

Filed Dec. 18, 1978, Ser. No. 970,165

Claims priority, application United Kingdom, Jan. 17, 1978, 01739/78

Int. Cl.[2] F16M *13/00*

U.S. Cl. 248—660 **6 Claims**



1. An extensible beam arrangement comprising a support, a first elongated element mounted on the support for movement relative thereto, a second elongated element supported by and movable relative to the said first element, displacement means connected with and operable between the support and the first element and adapted, upon actuation, to effect a relative shift therebetween, a drive transmission means connecting the support and said second element, the said drive transmission means being sensitive to relative movement between the support and the said first element and being adapted, upon such relative movement, to impart relative longitudinal movement as between the first and second elements, and a slide arrangement carried by the second element for movement relative to the second element under the action of further displacement means.

4,251,047

SWIVEL HOLD-DOWN DEVICE

Joseph D. Holtvogt, Miamisburg, Ohio, assignor to The Dayton Sure Grip & Shore Company, Miamisburg, Ohio

Continuation of Ser. No. 648,487, Jan. 12, 1976, abandoned. This application Jul. 24, 1979, Ser. No. 60,063

Int. Cl.[3] B28B *23/06*

U.S. Cl. 249—205 **7 Claims**

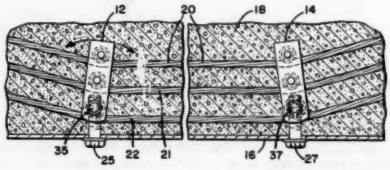
1. A hold-down anchor device, engageable by a threaded anchor member traversing a mold wall, for holding the reinforcing strands of a prestressed concrete building element in position in the mold while the strands are tensioned, the mold filled with concrete, and the concrete allowed to set, said anchor device remaining embedded in the building element after the threaded anchor member is removed and the resulting void grouted, comprising:

a pair of side frame elements disposed parallel to each other and positionable generally vertically in the mold,

a plurality of strand hold-down means extending transversely between said side frame elements, and

a substantially cylindrical swivel means pivotally secured to the lower ends of said side frame elements and having a threaded transverse opening therein for receiving said threaded anchor member, said side frame elements projecting below said swivel means, said swivel means further defining a pair of grooves extending circumferentially therearound for retaining bottom reinforcing strands near said ends of said side frame elements, said grooves positioned to either side of said threaded transverse opening, such that said bottom strands are beneath said swivel means and are at least as low as the projection of said side frame elements below said swivel means, said bottom strands being held closer to said mold wall than said swivel means and at least as close to said mold wall as said side frame elements, whereby the concrete forming said building element provides thermal insulation for said bottom strands to provide a building element having superior fire resistant characteristics and substantial immunity from rusting, and said anchor device is no closer to the surface of said building element than said bottom strands after said void is grouted.

6. A hold-down anchor device, engageable by a pair of threaded anchor members traversing a mold wall, for holding the reinforcing strands of a prestressed concrete building element in position in the mold while the strands are tensioned,



the mold filled with concrete, and the concrete allowed to set, said anchor device remaining embedded in the building element after the threaded anchor members are removed and the resulting voids grouted, comprising:

a pair of side frame elements disposed parallel to each other and positioned generally vertically in the mold,

a plurality of strand hold-down means extending transversely between said pair of side frame elements, and

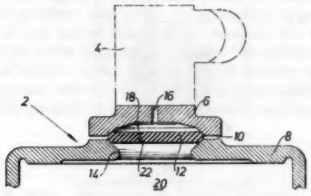
a substantially cylindrical swivel means pivotally secured to the lower ends of said side frame elements and having a pair of threaded transverse openings therein for receiving said threaded anchor members, said side frame elements projecting below said swivel means, said swivel means further defining a groove extending circumferentially therearound for retaining a bottom reinforcing strand near said ends of said side frame elements, said groove positioned between said side frame elements, and said threaded transverse openings positioned outwardly to either side of said side frame elements, such that said bottom strand is beneath said swivel means and is at least as low as the projection of said side frame elements below said swivel means, said bottom strand being held closer to said mold wall than said swivel means and at least as close to said mold wall as said side frame elements, whereby the concrete forming said building elements provides thermal insulation for said bottom strand to provide a building element having superior fire resistant characteristics and substantial immunity from rusting, and said anchor device is no closer to the surface of said building element than said bottom strand after said voids are grouted.

4,251,048

PILOT VALVE

Sven E. F. Aurell, Växjö, Sweden, assignor to AB Svenska Flaktfabriken, Stockholm, Sweden

Filed Mar. 16, 1979, Ser. No. 21,062
Claims priority, application Sweden, Mar. 17, 1978, 7803121
Int. Cl.³ F16R *31/126, 31/02*
U.S. Cl. 251—30 **9 Claims**



1. A pilot valve for controlling a pulse valve, which pilot valve comprises a housing having inlet and outlet, a movable valve element disposed in the housing, and means for switching said valve element between closed and opened positions, said inlet and outlet communicating in the open position, characterized in that said housing has a cylindrical interior outline so that at least a portion of the interior of the housing presents a circular seat in one plane, said outlet being shaped as a circumferential radial slot from this seat portion around at least a part of the periphery, and in that said valve element is formed as a flexible disc which in the closed position is positioned in said plane to seal said slot with the outer peripheral margin of said disc engaging said seat at the inner side of said housing, said means being arranged to switch said valve element to the open position by giving said disc a curved cup-shape out of said plane so that said outer peripheral margin is displaced from said seat whereby it no longer covers said slot.

4,251,049

TANK VALVE APPARATUS

Herman D. Muehl, 10851 Drury La., Lynwood, Calif. 90262

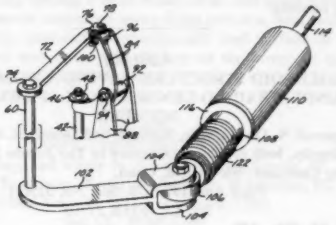
Filed Jan. 22, 1979, Ser. No. 5,181
Int. Cl.³ F16K *31/122*
U.S. Cl. 251—58 **4 Claims**

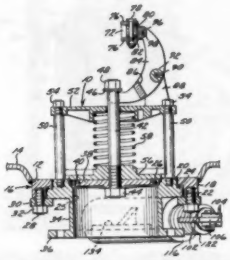
1. In a tank valve apparatus including mounting means for securement to a tank to define a discharge opening from said tank; a valve reciprocably movable between open and closed positions for opening and closing said discharge opening, respectively; bias means tending to move said valve toward said closed position; linkage means coupled to said valve and operative to move said valve against the bias of said bias means toward said open position; an improved actuating means for operating said linkage means, said actuating means comprising:

an elongated cylinder having an opening to admit pressurized fluid, and further having a piston rod opening in an end wall thereof;

a piston rod extending through said piston rod opening in substantially fluid tight relation and longitudinally reciprocable between an extended position and a retracted position, said actuating means being connected to said linkage means to locate said valve in said open position upon location of said piston rod in said extended position, and to locate said valve in said closed position upon location of said piston rod in said retracted position; and

a piston located within said cylinder and carried by said piston rod, said piston having an end face portion defining a first effective pressure area and further having an opposite face portion defining a second effective pressure area less than said first effective pressure area, said opposite face portion being adapted to engage upon said end wall in sealing relation in said extended position of said piston rod thereby to isolate said opposite face portion from pressure in said cylinder, the periphery of said piston being out of sealing relation with the longitudinally extending walls of said cylinder whereby pressure in said cylinder is operative upon both said end face portion and said opposite face portion in locations of said piston rod other than said extended position.



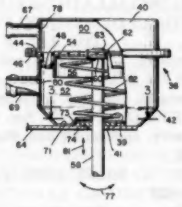


4,251,050

TURBOCHARGER CONTROL ACTUATOR

Charles E. McInerney, Rolling Hills Estates, Calif., assignor to The Garrett Corp., Los Angeles, Calif.

Filed Oct. 18, 1977, Ser. No. 843,392
Int. Cl.³ F16K *31/145*
U.S. Cl. 251—61 **12 Claims**



1. An actuator for controlling a turbocharger comprising a housing; a pressure responsive diaphragm dividing said housing into a pair of chambers; an actuator rod having one end connected to said diaphragm for movement therewith and extending therefrom through one of said chambers and out of said housing through an opening formed in said housing; a first port coupled to subatmospheric pressure opening into said one chamber; a second port coupled to positive pressure opening into the other of said chambers; a relatively rigid washer carried slidably on said rod and slidably with respect to said housing for sealing the passage of said rod through said opening to allow axial and angular movement of said rod, said housing including an exterior recess adjacent the opening forming a seat for receiving said washer; and retaining means

for retaining said washer in slidably sealing relation with said housing, whereby sub-atmospheric pressure in said one chamber serves to help draw said washer into sealing relation with said housing.

4,251,051

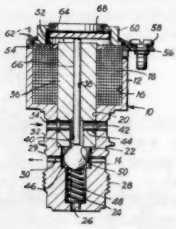
SOLENOID STRUCTURE HAVING A RELATIVELY UNRESTRAINED GENERALLY FLAT ARMATURE MEMBER

Raymond N. Quenneville, Suffield, and Dennis R. Custer, West Granby, both of Conn., assignors to The Jacobs Manufacturing Company, Bloomfield, Conn.

Filed Apr. 19, 1979, Ser. No. 31,411

Int. Cl.³ F16K *31/02*

U.S. Cl. 251—129 **24 Claims**



1. An apparatus comprising a solenoid body member, a solenoid coil disposed within the outer region of said body member, a sleeve member formed from a magnetic material disposed within the central region of said body member, said sleeve member having a bore formed at least partially therethrough, means formed from a magnetic material having formed therein an armature chamber, said armature chamber having a first open end located adjacent a first end of said sleeve member, an armature member freely disposed within said armature chamber, and magnetic circuit means interconnecting said means having formed therein said armature chamber and a second end of said sleeve member.

4,251,052

FLUID FLOW CONTROL VALVE ESPECIALLY FOR USE IN HEATING INSTALLATIONS FOR MOTOR VEHICLES AND A METHOD OF ASSEMBLING AND ADJUSTING THE VALVE

Wilhelm Hertfelder, Steinenbronn, and Erich Junginger, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

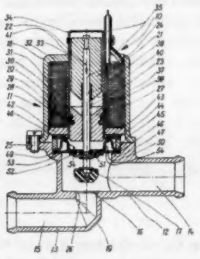
Filed Oct. 30, 1979, Ser. No. 89,905

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1978, 2847748

Int. Cl.³ F16K *31/06*

U.S. Cl. 251—129 **35 Claims**

1. A fluid-flow control valve, especially for use in a heating installation for motor vehicles, comprising a closed housing having a water inlet socket and a water outlet socket and defining therebetween a valve seat; a valve member movable between a closed position engaging said valve seat and preventing flow of water from said inlet socket to said outlet socket and an open position; means for moving said valve member to said closed position and comprising an electromagnet having a magnet spool, a plunger-type armature axially movable in said valve spool, a rod arranged coaxially to said valve seat and fixed at one end to said armature for movement therewith and carrying fixed to the other end thereof said valve member; a magnet core arranged coaxial with said armature between the latter and said valve member through which said rod passes with clearance; means normally holding said valve member in said open position and comprising a compression spring abutting with opposite ends respectively against said armature and said magnet core; and a cup-shaped guide sleeve of at most weakly magnetizable material in said housing and guiding with its inner peripheral surface said armature for movement in axial direction, said guide sleeve communicating at one end with the space in the housing between said inlet and said outlet socket, and said armature being provided on its outer peripheral surface with axially extending grooves per-



mitting flow of water from said one to said opposite closed end of said cup-shaped guide sleeve, said magnet core being held with a predetermined force in said guide sleeve with the end thereof facing said armature at a distance from the latter, which, when said valve member is in said closed position, is at most only slightly greater than the wear of the valve member after a predetermined time of its use.

4,251,053

DIAPHRAGM DEVICE

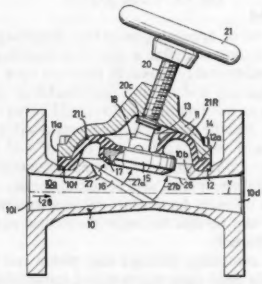
Lothar Wurzer, Kasparstrasse 34, Efferen near Cologne, Fed. Rep. of Germany (5032)

Filed Mar. 8, 1976, Ser. No. 664,428

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1975, 2510428; Feb. 14, 1976, 2606033

Int. Cl.³ F16K *7/16*

U.S. Cl. 251—331 **16 Claims**



1. An apparatus comprising a first, lower, housing member having a circular top opening and an annular seat coaxial with the opening; a flexible diaphragm member spanning said opening and having an annular diaphragm rim lying in a plane and engaged with said seat over the entire circumference thereof, and a continuous inverted trough-like annular vault portion concentric with said rim to form an upwardly projecting concavity with arcuate radial sections; a second, upper housing member having an upwardly recessed bottom portion clamping the diaphragm rim on said seat; said diaphragm member in its central region including a disk-like portion obliquely disposed to and intersecting said plane of said rim and connected to said annular vault portion, said disk-like portion constituting an active member swingable about a swing axis in flap-like

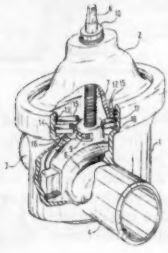
fashion between its upper and lower extreme positions, said upwardly projecting concavity being maintained at the extreme positions and all intermediate positions; said diaphragm member being substantially symmetrical with respect to a symmetry plane extending perpendicularly to and diametrically to said annular rim, with said swing axis perpendicular to the symmetry plane; and an actuating device having a longitudinal axis and being axially shiftable in said upper housing member, and being pivotably connected to said active member thereby providing, in the symmetry plane, an action point on the active member, said point being located approximately centrally of said active member; and wherein, for the as-fabricated shape of the diaphragm member, the centers of curvature of said arcuate radial sections of said annular vault at the symmetry plane, and said action point lie upon a line extending substantially parallel to and in the region of said rim.

4,251,054

VALVE

Hendrik B. Baas, Halsteren, Netherlands, assignor to B.V. Machinefabriek en IJzergieterij*, Bergen op Zoom, Netherlands

Filed Jun. 7, 1979, Ser. No. 46,486
Claims priority, application Netherlands, Jun. 19, 1978, 7806614
Int. Cl.³ F16K *3/00*; B65D *45/32*
U.S. Cl. 251—367 **4 Claims**



1. A valve comprising, in combination:

a housing defining a hollow body having two connecting stubs projecting therefrom and normally communicating through the interior of said body, said stubs adapted to be connected to respective conduits of a liquid flow system, and said body including retention means for retaining valve means which can control said communication between said stubs;

valve means retained by said retention means and including a rotatable actuator rod whereby the valve means may be actuated;

said body having a reception portion defining a sleeve recess opening into the interior of said body to allow assembly of said valve means thereinto and said actuator rod extending substantially axially through said sleeve recess, said reception portion presenting an inwardly facing wall surface surrounding said actuator rod and having an inner groove and an outer groove, each groove being continuous and contained in a respective plane normal to the axis of said rod;

a generally bell shaped cover including a packing gland at its apex through which said rotatable actuator rod extends in sealing relation, said cover having an outwardly flaring rim received in said recess and of such dimensions as to establish a slide fit in said sleeve recess between said grooves;

a resilient lock ring received in said outer groove and overlying said outwardly flaring rim of the cover whereby to lock said cover within said recess;

said cover having a lower portion projecting from said rim to present an outer wall surface lying in spaced relation to said wall surface of the body and overlapping said inner groove; and

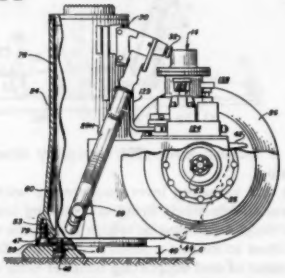
a sealing ring having a bead received in said inner groove and an apron extending away from said rim, said sealing ring being sandwiched between said wall surface of the body and said outer wall surface of the cover so as to produce a seal therebetween.

4,251,055

JACK CONSTRUCTION

David S. Leong, and Vitaly N. Levit, both of Chicago, Ill., assignors to Templeton, Kenly & Company, Broadview, Ill.

Filed Aug. 28, 1978, Ser. No. 937,501
Int. Cl.³ B66F *5/04*
U.S. Cl. 254—2 B **4 Claims**



1. A heavy-duty, mobile jack construction comprising a housing; a piston and cylinder unit mounted in said housing; the piston of said unit being reciprocally movable relative to said cylinder by hydraulic pressure; a pump disposed in said housing for pumping hydraulic fluid; conduit means for conveying hydraulic fluid from said pump to the cylinder of said unit; motive means mounted on said housing for driving said pump; said housing defining a hydraulic fluid reservoir encompassing at least a portion of said piston and cylinder unit; base means for said cylinder in fluid-sealing engagement therewith; a high-strength plate fixedly secured to said base means and the lower periphery of said housing whereby said housing, base means and plate assume a rigid assembly in relatively immovable relationship; said jack having a lowermost supporting plate underlying said jack construction for supporting said jack on a support surface in the normal course of jack use; said lowermost plate being resiliently movable relative to the remainder of said jack construction and being secured to said high-strength plate; said securing means having a plurality of spring washers mounted thereon for resiliently separating said lowermost plate from said high-strength plate.

4,251,056

CREEP PREVENTING SAFETY DEVICE FOR HYDRAULIC JACKS, ESPECIALLY OF THE TYPE EMPLOYED FOR PARTIALLY OR ONE-SIDE RAISING ROAD VEHICLES

Carmelo Maniglia, Genova Sestri, Italy, assignor to Luciano Riganti, Cassano Magnago, Italy

Filed Jun. 4, 1979, Ser. No. 44,956
Int. Cl.³ B60P *1/48*
U.S. Cl. 254—8 B **2 Claims**

1. A hydraulic lifting jack for vehicles, said jack comprising:

(A) a frame,

(B) a lifting arm (4),

(C) means pivotally mounting said arm on the frame,

(D) said arm being adapted to bear a load on its free end,

(E) hydraulic means (14,16) for raising and lowering said lifting arm, and

(F) a safety device comprising

(i) a rack (60) on the lifting arm,

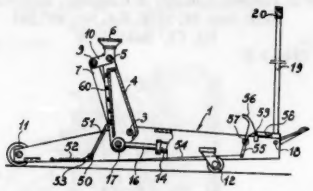
(ii) a pawl-type supporting member (51),

(iii) means pivotally mounting said member on the frame for pivotal movement to and from a supporting position in which the free end of said supporting member engages said rack in the raised position thereof and prevents lowering of the same,

(iv) a spring (52) urging said supporting member into engagement with said rack,

(v) a cable (54) for disengaging said supporting member from the rack against the action of said spring,

(vi) an actuating lever (56) swingably mounted on said frame and connected to said cable to operate said cable for disengaging said supporting member from said rack,



(vii) a locking lever (59) swingably mounted on said frame,

(viii) said actuating lever cooperating with said locking lever to selectively bring said locking lever

(a) from a position in which it permits said actuating lever to assume a position corresponding to engagement of said supporting member with said rack

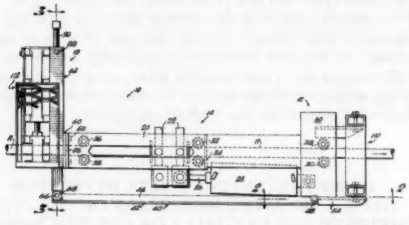
(b) to a position in which said locking lever locks said actuating lever in a position corresponding to disengagement of said supporting member from said rack of said lifting arm.

4,251,057

LEVELING MEANS FOR AN UNDERGROUND PIPE INSTALLER DEVICE

William O. Schosek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Filed Aug. 20, 1979, Ser. No. 68,153
Int. Cl.[3] E21B *19/00*
U.S. Cl. 254—29 R **7 Claims**



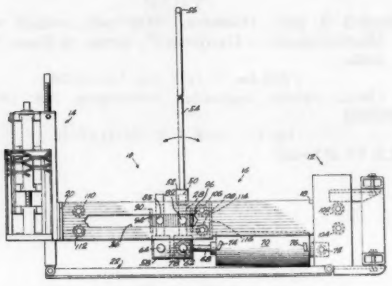
1. A leveling device for an underground pipe installer of a type including an elongated generally longitudinally extending main central length with first and second end portions, reversible drive jaw means, reciprocally journaled in said main central length to engage and drive a rod through the ground for a predetermined distance to form a hole into which a pipe or the like, attached to a leading end of the rod, is withdrawn into an installed position, means to reciprocally drive the jaws and guide roller means to direct the rod in its movements in a generally longitudinal parallel relation to the main central length, the leveling device comprising, an elongated, generally longitudinally extending main support base pivotally attached at a first end relative to a bottom portion of the first end portion of the main central length, a generally upright jack means including a first generally upright portion with fixed attachment means to the second end portion of the main central length, and a second generally upright portion slidably positionable relative to said first generally upright portion and including a lower end pivotal attachment to a second end of said main support base, and means to adjust the position of said second generally upright portion relative to said first generally upright portion in a generally upright relationship.

4,251,058

DRIVE JAWS FOR AN UNDERGROUND PIPE INSTALLER DEVICE

William O. Schosek, 7942 Marx Dr., North Fort Myers, Fla. 33903

Continuation-in-part of Ser. No. 951,626, Oct. 16, 1978. This application Aug. 20, 1979, Ser. No. 68,150
Int. Cl.[3] E21B *19/00*
U.S. Cl. 254—29 R **9 Claims**



1. A reversible drive jaw means for use in an underground pipe installer device of the type used to install an underground pipe between two predetermined locations, the drive jaw means being power actuated by a fluid drive means such as a pneumatic piston and cylinder assembly operated by a remote control reversing valve and connected to the drive jaw means to impart reciprocating movement thereto, said drive jaw means comprising

at least one drive jaw assembly slidably mounted between a pair of upstanding, spaced apart side walls of the installer device, including a pair of longitudinal slots, respectively in said side walls, a slide block, slidably journaled in each of said slots, said slide jaw assembly including a main transverse jaw plate portion with a round central through hole somewhat enlarged relative to the diameter of a rod, normally passing longitudinally therethrough; a pair of co-axial oppositely disposed journal pins, extending outwardly from opposed side edges of said jaw plate, pivotally journaled respectively in said slide blocks in a transverse axial relation with a longitudinal axis of said rod, whereby said journal pins axes and rod axis lie in a substantially common plane in a generally right angular intersecting relation.

4,251,059

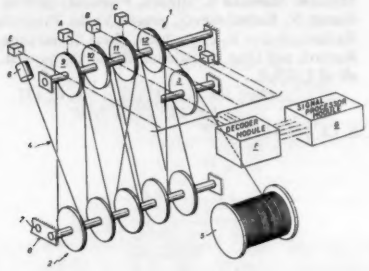
APPARATUS FOR DETERMINING THE REEVING OF A PULLEY SYSTEM

Bernard Fougea, Neuilly-sur-Seine, France, assignor to Coignet S.A., Paris, France

Filed Apr. 9, 1979, Ser. No. 28,321
Claims priority, application France, Apr. 12, 1978, 78 10826
Int. Cl.[3] B66C *23/60*; B66D *1/36, 1/54*
U.S. Cl. 254—338 **4 Claims**

1. In a pulley system for a jib or boom of load lifting equipment including a set of head pulleys fixed to the jib or boom and a set of cooperable reeving pulleys, and a rope reeving at least some of the head and reeving pulleys so as to define a reeving pathway which corresponds to the lift load and rope

load, the rope being attached at one end to an anchoring point and wound at its other end around a hoist drum, the improvement comprising sensing means operatively associated with at least some of said head pulleys for sensing the presence or absence of the rope at said associated pulley and for delivering a signal having one of two states, a first said state corresponding to the presence of the rope at said associated pulley and a second said state corresponding to the absence of the rope at said associated pulley, decoding means coupled to said sensing means for receiving said signal from each of said sensing means and delivering a complex digital signal representative of the actual reeving pathway for comparison with a predetermined reeving pathway.



4,251,060
HAND HOIST

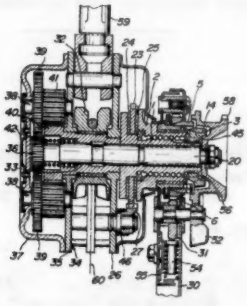
Noritoshi Suzuki, Zama; Masakatsu Tsubokawa, Yokohama, both of Japan; Roy N. Bathum, Jr., Mercer Island, and Ron S. Selset, Bellevue, both of Wash., assignors to Kabushiki Kaisha Kito, Kawasaki, Japan and Beebe Brothers, Inc., South Seattle, Wash.

Filed Aug. 10, 1978, Ser. No. 932,824

Claims priority, application Japan, Dec. 20, 1977, 52-152452; Dec. 21, 1977, 52-153010

Int. Cl.³ B66D *1/00*

U.S. Cl. 254—356 **16 Claims**



1. A hand hoist comprising: a driving shaft, a brake support member supporting brake plate means, said brake support member being fixedly mounted on said driving shaft, gear means detachably connecting said driving shaft to a load pulley, a brake biasing member threadedly engaged on said brake support member, a retainer ring fixed to an outer surface of the brake biasing member, a transmission ring having a frusto-conical frictional outer surface, said ring being non-rotatably fitted on said retainer ring, a manually rotated means for rotating said brake biasing member relative to said brake support member and including a frusto-conical frictional inner surface mating with said frusto-conical frictional outer surface of said transmission ring, and Belleville springs for urging said frusto-conical frictional surfaces against each other.

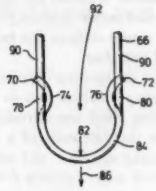
4,251,061
SNAP ROLLER

Edward Marshall, 4 Rosny St., Garden City 3207, Victoria, Australia

Continuation-in-part of Ser. No. 840,751, Oct. 11, 1977, abandoned. This application Sep. 8, 1978, Ser. No. 940,752

Int. Cl.³ B66D *1/36*

U.S. Cl. 254—390 **7 Claims**



1. A snatch-block apparatus comprising a pulley, a wire-like rod, a central portion of said wire-like rod passing through an opening in said pulley such that said pulley is journalled thereto, a pair of portions of said wire-like rod located at one end adjacent said central portion of said wire-like rod and extending radially outwardly from said central portion of said wire-like rod, said pair of portions of said wire-like rod having the longitudinal axes thereof directed substantially parallel to one another, said wire-like rod having a pair of hook-like excursions, each of said hook-like excursions disposed adjacent the other end of said pair of portions, each of said hook-like excursions also having a curved portion, each of said curved portions being disposed immediately adjacent the free ends of said wire-like rod, whereby each of said curved portions of said hook-like excursions engage an opposite one of said pair of portions of said wire-like rod at points intermediate said opening and the distant most parts of said pair of hook-like excursions from said pulley in response to opposed forces being applied to said pulley and to said distant most parts of said pair of hook-like excursions, said hook-like excursions extend between said pair of portions in a curved course, each of said curved courses being disposed in a curved-like shape which is oppositely directed from said curved portions, said curved courses being substantially parallel to one another, each of said curved portions of said hook-like excursions having its free end thereof disposed on opposite sides of the plane defined by said longitudinal axes, each said distant most parts of said hook-like excursions residing on a side of said plane which is opposite to the side of said plane wherein the free end of its contiguous curved portion resides.

4,251,062
IGNITION HOOD WITH SWIRL COMBUSTION CHAMBER

Erhard Pobuda, Kelkheim, and Alois Kilian, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Dravo Corporation, Pittsburgh, Pa.

Filed Mar. 23, 1978, Ser. No. 889,356

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1977, 2712989

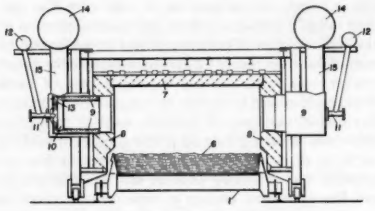
Int. Cl.³ C22B *1/20*

U.S. Cl. 266—178 **3 Claims**

1. An apparatus for the ignition of solid fuel containing sinter mixtures on a sintering machine and in which a combustible fluid and an oxidizing fluid are introduced in a plurality of burners mounted in the sidewalls of a hood located over a portion of the sintering machine and wherein hot gases pro-

duced by the chemical action of said fluids in the burners are sucked from said hood through the sinter mixture, each of said burners having a cylindrical, horizontally disposed combustion chamber with a rear wall constructed of refractory material, a central feeding device extending through the rear wall of the combustion chamber for directing one of said fluids axially into the combustion chamber substantially along a central axis thereof, said rear wall having two rows of intake orifices for said second of said fluids arranged around the central feeding device in a circular pattern, and at least one row of which is oriented to direct the second of said fluids into the combustion chamber in a direction which extends radially and axially inward toward but circumferentially around the central axis of the combustion chamber wherein the improvement comprises at least one row of said intake orifices provided with a rotable disc by which said intake orifices can be sealed and reopened through rotation of said disc.

3. An apparatus for the ignition of solid fuel containing sinter mixtures on a sintering machine and in which a combustible fluid and an oxidizing fluid are introduced in a plurality of burners mounted in the sidewalls of a hood located over a portion of the sintering machine and wherein hot gases produced by the chemical action of said fluids in the burners are sucked from said hood through the sinter mixture, each of said burners having a cylindrical horizontally disposed combustion chamber with a rear wall constructed of refractory material, a central feeding device extending through the rear wall of the combustion chamber for directing one of said fluids axially into the combustion chamber substantially along a central axis thereof, said rear wall having two rows of intake orifices for said second of said fluids arranged around the central feeding device in a circular pattern and at least one row of which is oriented to direct the second of said fluids into the combustion chamber in a direction which extends radially and axially inward toward but circumferentially around the central axis of the combustion chamber, a cylindrical casing closed at one end surrounding the combustion chamber and spaced therefrom to form an enclosed distributor space which extends annularly around the sidewalls of the combustion chamber and axially from the rear wall thereof and which communicates with said intake orifices, a pipeline which extends axially through the closed end of the casing and distributor space to deliver one of said fluids to said central feeding device and a line to introduce the second of said fluids into the annular portion of said distributor space to cool the combustion chamber while preheating said second fluid supplied to said intake orifices wherein the improvement comprises at least one row of said intake orifices provided with a rotatable disc by which said orifices can be sealed and reopened through rotation of said disc.

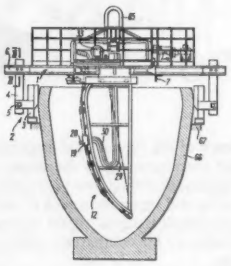


4,251,063

DEVICE FOR GUNITING THE LINING OF CASTING LADLES

Ilya A. Goldberg, prospekt Shaumiana, 47, kv. 35; Boris A. Kobtsev, prospekt Stachek, 57, kv. 49; Jury A. Polonsky, Krasnopuitolovskaya ulitsa, 129, kv. 49, all of Leningrad; Boris A. Velikin, 11 Parkovaya ulitsa, 44, korpus 4, kv. 77, Moscow; Mamuka S. Mindeli, Pionersky proezd. 8, Rustavi; Guram V. Kashakashvili, proezd Vazha Pshavela, 1, kv. 33, Rustavi; Shalva V. Popiashvili, ulitsa Sovetskaya, 17, kv. 37, Rustavi, and Otar N. Suladze, Pionersky proezd. 3, Rustavi, all of U.S.S.R.

Filed Jul. 30, 1979, Ser. No. 62,173
Int. Cl.³ C21B 7/04
U.S. Cl. 266—281 **2 Claims**



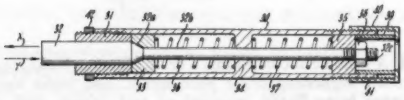
1. In a device for guniting the lining of casting ladles, comprising a platform with a carriage mounted thereon by means of a guide and having a nozzle for supplying the gunite, an improvement comprising a guide having a curvature corresponding to the curvature of the lining of the casting ladle, being mounted on the platform so as to extend downward from the platform into the casting ladle, and being rotatable about its vertical axis; means mounted on the platform for effecting radial displacement of the guide with respect to said vertical axis; and adjustable supports on said platform for fixing said platform on the ladle.

4,251,064

SHOCK ABSORBER

Thomas M. Camilleri, Brooklyn, N.Y., assignor to Sycam Advanced Technology Corp., Brooklyn, N.Y.

Filed Mar. 29, 1979, Ser. No. 24,947
Int. Cl.³ F16F 3/00
U.S. Cl. 267—136 **8 Claims**

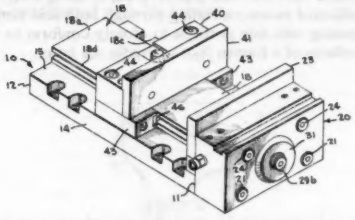


1. A shock absorber having continuous, adjustable resistance in both directions comprising a slide piston passing through a fixed collar and through two movable collars, and a single elastic force-absorbing means disposed between and abutting each movable collar, the slide piston having a frusto-conical taper adapted to fit within a complementary frusto-conical recess within one of the two movable collars.

4,251,065
QUICK SET HYDRAULIC VISE

Thomas F. McDougal, TR. 5, Box 165, Fairmont, W. Va. 26554

Filed Jan. 24, 1980, Ser. No. 115,046
Int. Cl.[3] B23Q *3/08*
U.S. Cl. 269—25 18 Claims

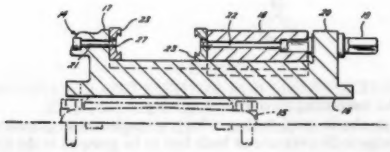


1. A quick set hydraulic workholding vise comprising an elongated stationary base plate member having a fore-and-aft longitudinal axis, a front stationary jaw fixed to said base plate member at a front end thereof and a rear jaw movable toward and away from said stationary jaw along said longitudinal axis, an elongated slide plate of narrower width than said base plate member overlying and extending centrally along substantially the length of the latter, means supporting the slide plate for a limited predetermined range of longitudinal movement between a forward gripping position and a rearward release position for the movable jaw, means interfitting said movable jaw on the slide plate for sliding movement of the movable jaw to coarse adjustment position along the length of the slide plate disposing the jaws at a work-release spacing slightly larger than the corresponding dimension of the work portion to be received between the jaws, compound wedge means for releasibly gripping opposite side portions of the slide plate and clamping the movable jaw thereto at the coarse adjustment position, hydraulic power means including a movable pressure plate associated with the stationary jaw connected to said slide plate for rapidly moving the slide plate and the movable jaw clamped at its coarse adjustment position thereon to said forward gripping position responsive to application of fluid pressure force to the power means, and means for returning said slide plate and movable jaw thereon to said rearward release position upon removal of the fluid pressure force from the power means.

4,251,066
VISE

Carlton L. Bowling, P.O. Box 1501, Huntsville, Tex. 77340

Continuation of Ser. No. 790,991, Apr. 26, 1977, abandoned.
This application May 22, 1978, Ser. No. 908,517
Int. Cl.[3] B25B *1/24*
U.S. Cl. 269—283 17 Claims

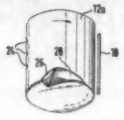


1. For use in a vertical milling machine or the like, a vise, comprising a pair of locking jaws each having a means providing a dovetail groove extending along its inner side, each groove having a base and a pair of oppositely facing tapers, each groove-providing means also having a slot extending longitudinally along the base of the groove therein, but terminating short of its ends, and means connecting the tapers on opposite sides of the slot for movement toward and away from one another.

4,251,067
STACKER FOR FLAT SHEET MATERIAL SUCH AS BANKNOTES, BANK PAPERS, RECEIPTS AND THE LIKE

Wilhelm Mitzel, Neukeferloh, Fed. Rep. of Germany, assignor to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 50,976
Claims priority, application Fed. Rep. of Germany, Dec. 12, 1978, 2853538
Int. Cl.[3] B65H *29/24*
U.S. Cl. 271—196 8 Claims

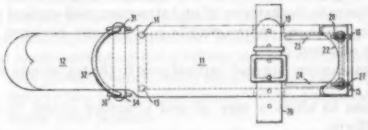


1. A stacker for flat material sheets having corners subject to folding, said stacker including a rotatable stacker drum for receiving sheets at a first position and for depositing the sheets on a stack at a second position having a pressure plate for pressing the sheets against the drum, said drum having suction openings in the exterior thereof for adhering the sheets to the drum, said drum having a corner unfolding cutout on the exterior of the drum ahead of the suction openings in the direction of rotation of the drum, said cutout comprising an unfolding face preceded by a run-in face, the projection of said unfolding face on the end of said drum generally forming a radius of said drum, said cutout being so located on said drum as to engage the folded corners of the sheets in the stack when the stack is pressed against the drum by the pressure plate.

4,251,068
EXERCISING DEVICE FOR SKIERS

Edward J. Tarnacki, 408 Hudson St., Jermyn, Pa. 18433

Continuation of Ser. No. 7,987, Jan. 31, 1979, abandoned. This application Jul. 12, 1979, Ser. No. 56,897
Int. Cl.[3] A63B *69/18*
U.S. Cl. 272—97 4 Claims



1. An exercising device for developing a user's leg muscles which are normally involved in skiing, said exercising device comprising:

a platform, said platform adapted to receive a ski boot worn by the user of said exercising device;

an oval shaped body portion secured beneath said platform, a ski portion of said platform extending forwardly of said oval shaped body at a first end of said platform;

boot toe retaining means adjustably secured on said ski portion of said platform, said toe retaining means includ-

ing a semi-circular offset portion for engaging the boot toe and a pair of spaced vertical rods extending downwardly from said semi-circular portion on both sides of said ski portion, said vertical rods being slidable along said ski portion of said platform;

boot heel retaining means adjustably secured at a second end of said platform, said heel retaining means having a boot heel abutting portion secured on said platform by fastening means having vertical members extending through said platform and said heel abutting portion, and a horizontal member fitting under said platform; and

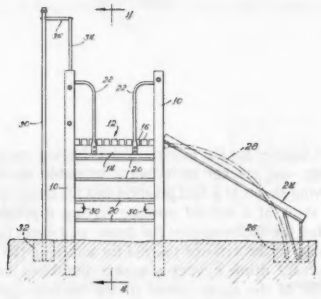
a strap passing between said platform and said oval shaped body portion intermediate said toe and heel retaining means to secure the boot to the platform.

4,251,069

CHILD RECREATION STRUCTURE

Frank W. Beller, Aurora, Ill., assignor to Recreation Systems Co., N. Aurora, Ill.

Filed Mar. 12, 1979, Ser. No. 19,888
Int. Cl.³ A63B *17/00*
U.S. Cl. 272—113 **2 Claims**



1. A child recreation structure comprising

a. a horizontal platform for supporting a user of the structure, the platform being situated above the ground and having at least four sides,

b. a vertical post attached to each corner of the platform to support the platform, at least two adjacent posts rising above said platform,

c. an arch extending between and rising above said two adjacent posts, said arch being unitary and including a pair of base legs which extend generally horizontally outwardly from said arch, each said leg extending to a corresponding one of said two adjacent posts,

d. a vertical pole adjacent to and spaced from said platform at said arch and extending above said platform to at least the height of the top of said arch for sliding from said platform to the exterior of said structure, said vertical pole being arranged approximately equidistantly between said two adjacent posts,

e. means connecting said vertical pole to the top of said arch, and

f. means to allow a user of said structure access to said platform.

4,251,070

SUPINE EXERCISE DEVICE

Helen M. Leseberg, 260 Rowayton Ave., Rowayton, Conn. 06853

Filed Aug. 6, 1979, Ser. No. 64,100
Int. Cl.³ A63B *21/18*
U.S. Cl. 272—126 **7 Claims**

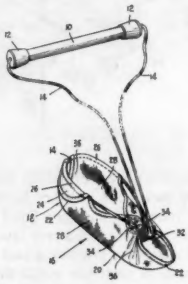
1. An exercise device for humans, adapted for use with the human body in a supine position, comprising in combination:

(a) a hand grip,

(b) pull-cord means attached to the hand grip and extending away therefrom generally in one direction, and

(c) a flexible moccasin-like stirrup connected to the pull-cord means,

(d) each of two opposite side portions of said stirrup being folded back on itself and secured, forming a tunnel, said pull-cord means extending through both said tunnels and causing said side portions to closely conform to the side surfaces of a human foot to cradle the latter,



(e) said stirrup having a connector at its front, through which the pull-cord means passes,

(f) said pull-cord means being movable lengthwise in said connector to enable it to activate said opposite side portions of the stirrup to cause said engagement thereof with said sides of the foot, and

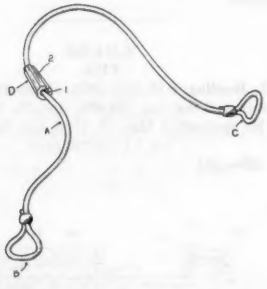
(g) means on said pull-cord means, for limiting the movement of the same through said connector, thereby to limit the said activation of the opposite side portions.

4,251,071

EXERCISING DEVICE WITH COMPRESSIBLE HAND GRIP ON AN ELASTIC CARD

Craig D. Norton, 4844 Trinidad Ave., Oakland, Calif. 94602

Filed Aug. 17, 1978, Ser. No. 934,690
Int. Cl.³ A63B *21/02*
U.S. Cl. 272—137 **2 Claims**



1. An exercising deviced comprising:

(a) an elastic cord having a loop at each end to permit the loops to fit over one or both feet or be grasped in the hand of the one using the device;

(b) a resilient hand grip means having an axial bore extending throughout its length with a radial cut coextensive with the bore and extending from the bore outwardly to the periphery of the hand grip means so that the two walls of the radial cut may be forced apart to permit the entrance of one or two elastic cords into the bore;

(c) said hand grip means being squeezed by the user with

sufficient strength to frictionally connect said grip means to said cord or cords, whereby the hand muscles are exercised; and

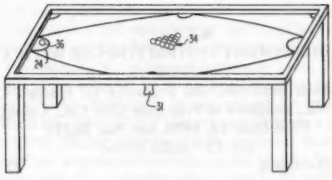
(d) said hand grip means thus frictionally gripping the cord or cords can be pulled to elongate the cord or cords, thereby simultaneously exercising the arm and body muscles coordinated with the exercise.

4,251,072

MARBLE POOL GAME AND EQUIPMENT FOR PLAYING THE GAME

Wilson B. Anthony, 313 Carter St., Auburn, Ala. 36830

Filed Aug. 22, 1978, Ser. No. 935,986
Int. Cl.³ A63D *13/00, 15/00*
U.S. Cl. 273—14 **6 Claims**



1. A marble game comprising:

a substantially horizontal, rectangular playing surface bounded on all sides and having at least one pocket thereon;

means for defining a substantially elliptical boundary area on said playing surface, the area encompassed by said boundary area being less than the total area of said playing surface and having a taw zone located on the periphery of said boundary area at each of the remote ends and along the longitudinal axis thereof, each of said taw zones being of substantially identical configuration thereof;

a plurality of object marbles; and

at least one shooter marble for shooting by a player in an attempt to knock said object marbles onto said pocket.

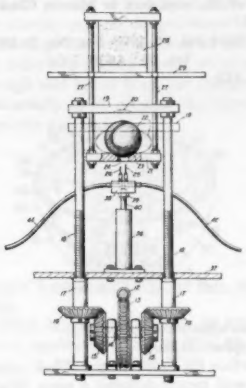
4,251,073

APPARATUS AND METHOD FOR MANUFACTURING GAS-FILLED BALLS WITH PRECISION

William D. Birdsong, Jr., 2534 Wessex La., Chattanooga, Tenn. 37421

Filed Jun. 26, 1978, Ser. No. 918,718
Int. Cl.³ B65B *31/04;* **A63B** *41/12*
U.S. Cl. 273—61 D **9 Claims**

2. In a method of manufacturing inflated game balls having highly uniform performance characteristics, the steps of supporting a ball, compressing the supported ball to a predetermined degree of compression, inflating the ball while it is under such degree of compression sufficiently to cause the ball to exactly counterbalance the applied force on it producing said degree of compression, discontinuing the inflation of the



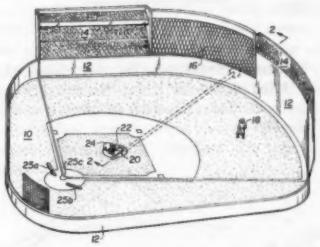
ball at that point and sealing it against escape of the inflating fluid.

4,251,074

MINIATURE BASEBALL GAME CONSTRUCTION

Peter Welker, 882 Dickson Hill, Petaluma, Calif. 94952

Filed Jun. 4, 1979, Ser. No. 45,168
Int. Cl.³ A63F *7/20*
U.S. Cl. 273—89 **8 Claims**



1. In a miniature baseball game of the type having a pitching arm at a pitcher's mound position and a batting arm at a home plate position, the improvement comprising:

(a) means mounting the pitching arm for continuously variable pivotal rotation under manual control in a vertical arc about a line between the pitcher's mound position and the home plate position;

(b) means mounting the ball on the pitching arm for movement therewith;

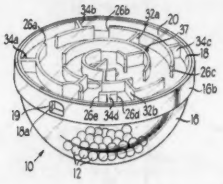
(c) means for rapidly moving the pitching arm toward the home plate position;

(d) means for rapidly terminating movement of the pitching arm toward the home plate position whereby the forward inertia of the ball toward the home plate position propels it off the ball mounting means and toward the home plate position in a trajectory determined at least in part by the speed of the pitching arm and the angular rotation of the pitching arm along said vertical arc.

4,251,075
MAZE GAME APPARATUS

Eugene Jaworski, Park Ridge, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Jul. 11, 1979, Ser. No. 56,597
Int. Cl.³ A63F 7/04
U.S. Cl. 273—113 **13 Claims**

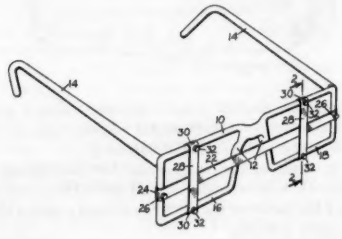


1. Maze game apparatus comprising:
at least one spherical ball;
a playing surface for supporting said ball while rolling;
upstanding wall means defining a maze upwardly of said surface providing a plurality of interconnected ball directing travel paths for said rolling ball, one of which paths communicates all the way between an inlet opening and an outlet position, and at least one other path in communication therewith, yet not providing complete communication all the way between said inlet opening and said outlet position;
a support base for said playing surface comprising a hollow, convexly curved wall extending downwardly of said playing surface adapted to rockably contact a supporting floor or the like permitting manual tilting of said playing surface for directing said ball to roll along selected ones of said travel paths of said maze between said inlet opening and outlet position; and
said inlet opening in communication with said curved wall permitting a ball to pass from said curved wall onto said playing surface into said one path.

4,251,076
GOLFING AID

Gerald A. Krupicka, 3584 Turner Rd., SE., Salem, Oreg. 97302

Filed Nov. 9, 1978, Ser. No. 959,229
Int. Cl.³ A63B 69/36
U.S. Cl. 273—183 B **1 Claim**

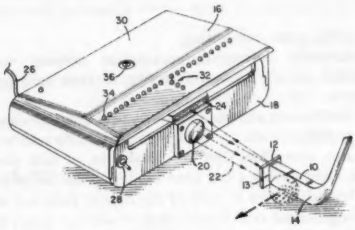


1. A golfing aid arranged to assist a person in lining up the direction of travel that a golf ball will take as it leaves a face surface of a golf club, said golfing aid comprising
(a) a spectacle-type frame having opposite sides and upper and lower ends,
(b) means on said frame arranged to hold it on a golfer's head adjacent the eyes,
(c) a first alignment bar,
(d) mounting means mounting said bar across said frame in front of both eyes of a golfer when said frame is worn on the head and being arranged to line up the direction of travel of a golf ball between an adjacent point and a distant point,
(e) said mounting means having an adjustable connection with said frame to adjust it between said upper and lower ends for proper alignment with the golfer's eyes,
(f) a pair of second alignment bars,
(g) and mounting means mounting said second alignment bars in upright position on said frame in intersecting relation with said first alignment bar and in spaced relation with each other so as to be positioned in front of respective eyes of the golfer,
(h) the mounting means for each of said second alignment bars having individual adjustable connection with said frame to provide adjustment of said second alignment bars to form a common focus line for the eyes of the golfer which is arranged to be lined up with the face surface of a golf club to cause the face surface of the golf club to be selectively positioned for intended direction of travel of a golf ball.

4,251,077
TARGET ALIGNMENT SYSTEM FOR USE WITH A GOLF CLUB

David T. Pelz, Beltsville, and Frederick G. Huegel, Crofton, both of Md., assignors to Preceptor Golf Ltd., Laurel, Md.

Filed Mar. 14, 1979, Ser. No. 20,511
Int. Cl.³ A63B 69/36
U.S. Cl. 273—186 A **12 Claims**



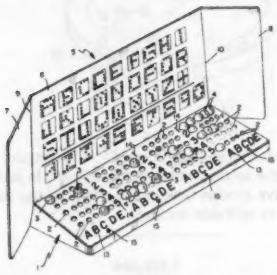
8. A golf club alignment system providing an indication of the angle of the ball striking face of a golf club with respect to a given target direction in an address position with the club head at rest and in a stroke position with the club head moving comprising the combination of:
a radiation source;
means for projecting said radiation source in a beam;
reflecting means attached to said gold club adapted to reflect said radiation beam at an angle determined by the position of said ball striking face;
a series of detectors operably responsive to said reflected radiation beam;
indicator means including a plurality of indicators, particular ones of said indicators connected to particular ones of said series of detectors;
circuit means for energizing one of said indicators in accordance with the corresponding detector being radiated by said radiation beam; and
further circuit means including a timer circuit for maintaining a particular one of said indicators energized when said corresponding detector is radiated for a period of time less than the predetermined time parameters established by said timer circuit.

4,251,078

GUESSING GAME

Mordechai Meirovitz, Haifa, Israel, assignor to Mego Corp., New York, N.Y.

Filed Dec. 8, 1978, Ser. No. 967,661
Int. Cl.³ A63F 9/18
U.S. Cl. 273—265 1 Claim



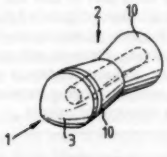
1. A game comprising, in combination, a game board including at least two spaced playing portions each for use by one of at least two players and each having markings thereon which are indicative of playing locations arranged at intersections of at least two intersecting arrays of imaginary lines; at least one set of indicators adapted to be so positioned at said playing locations as to be observable by the respective one and concealed from the other of the players and to form a pattern on the respective playing portion which conforms to at least one of a limited set of patterns available to the players for selection at the beginning of a particular game, and to be removed from the respective playing location of said playing portion of the one player when the position thereof at the respective intersection of said imaginary lines of said arrays is correctly guessed by the other player; and one or more concealment means with two major surfaces each of which has a different set of patterns to conceal each player's playing location.

4,251,079

PELLET FOR AN AIR, GAS OR SPRING GUN

Hugh E. Earl, 63 Hendon Way, London, N.W. 2, and Michael Robbins, 1 Redwood Mount, Beech Rd., Reigate, Surrey, both of England

Filed Aug. 30, 1978, Ser. No. 938,047
Claims priority, application United Kingdom, Jul. 3, 1978, 28654/78
Int. Cl.³ F42B 11/02
U.S. Cl. 273—428 13 Claims



1. A pellet for an air, gas or spring gun having a barrel bore through which said pellet travels when the gun is activated, said pellet comprising:

a head portion adapted to provide weight for the pellet for stability during flight and penetration when striking a target; and

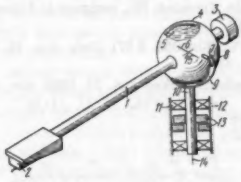
a skirt portion made of a different overall composition from said head portion, said skirt portion adapted to be securely attached to said head portion, said skirt portion being made of a substantially elastic plastic material which is essentially free of any metal filler and being proportioned with at least two portions which are larger in diameter than said head portion at its largest diameter, such that said pellet slidably engages the gun barrel bore essentially only by said large-diameter portions of said skirt portion which are deformed slightly during slidable travel of the pellet through said barrel bore, yet said skirt portion returns substantially to its original configuration once expelled from the gun barrel.

4,251,080

TONE ARM

Jury N. Sumachev, Vasilievsky ostrov, 10 linia, 23, kv. 6, Leningrad, U.S.S.R.

Filed Jul. 6, 1979, Ser. No. 55,472
Claims priority, application U.S.S.R., Nov. 28, 1978, 2684251
Int. Cl.³ G11B 3/16
U.S. Cl. 369—248 8 Claims



1. A tone arm comprising:

a lever having two ends: a pivoted axle of said lever; an articulated joint mounting said pivoted axle so that the latter passes through the center of revolution of the joint; a pickup head rigidly fixed on one of said ends of said lever; a hermetically sealed hollow casing rigidly coupled with said lever; an inner chamber of said casing, which is symmetrical with two mutually perpendicular axes intersecting at said center of revolution; a viscous fluid filling said inner chamber to the fullest extent and adapted to function as a damping medium; said casing together with said viscous fluid constituting a viscous dynamic damping subassembly intended to eliminate the tone arm main resonance frequency.

4,251,081

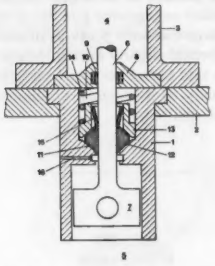
PISTON ROD SEAL

Knut A. Skoog, Vråkvägen 7, S-274 00 Skurup, Sweden

Filed Dec. 6, 1979, Ser. No. 100,967
Claims priority, application Sweden, Dec. 12, 1978, 7800087
Int. Cl.³ F16J 15/56
U.S. Cl. 277—3 2 Claims

1. A construction comprising sealing means for preventing gas leakage along a rectlinearly—reciprocating piston rod (6), a wall (1, 2) through which the piston rod (6) extends, a high pressure gas chamber (4) at one side of said wall (1, 2), a low pressure gas chamber (5) at the other side of said wall (1, 2), said sealing means including oil-feed means (16) inducing around the piston rod (6) in the low pressure gas chamber (5) a film of oil and biassing means (13, 14) maintaining radial forces on the gland (12) mounted around the piston rod (6) adjacent to said wall (1, 2), characterised in that the sealing

gland (12) is provided with a tubular extension (15) having a slightly increasing inner diameter in the direction towards the



high pressure chamber (4), the extension (15) being located outside the part (12) of the gland exposed to radial forces.

4,251,082

JOINT SEAL HAVING FORCE TRANSFER RING

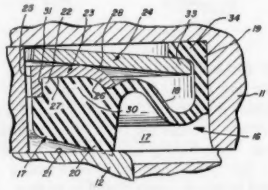
William E. Little, Tremont, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/0056, §371 Date Jan. 21, 1980, §102(e) Date Jan. 21, 1980

This PCT application filed Jan. 21, 1980, Ser. No. 142,207

Int. Cl.³ F16J *15/32, 15/36*

U.S. Cl. 277—87 **22 Claims**



1. In a joint (10) having a first member (11) and a second member (12) variably spaced from said first member, improved sealing structure (16) for providing a seal between said members across the variable space (21) therebetween, said sealing structure comprising:

a seal element (17) having a flexible mounting portion (18) carried by said first joint member, a sealing lip portion (20) carried by the mounting portion (18) to have engagement with said second joint member (12), and a corner portion (22) generally opposite said lip portion (20);

a force transfer member (23) embracing said corner portion (22) of the seal element; and

a spring (24) acting between said first member (11) and said force transfer member (23) for mechanically maintaining said force transfer member (23) in embracing association with said corner portion (22) and applying a biasing force to said lip portion (20) to effect dynamic sealing engagement of said lip portion (20) with said second joint member (12) over the range of variable spacing between said joint members (11,12).

4,251,083

PISTON RING WITH TONGUE AND GROOVE JOINT

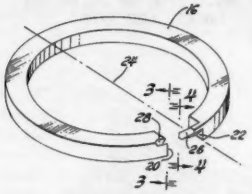
Adriel Montes, 18415 Weaver, Detroit, Mich. 48228

Filed May 15, 1979, Ser. No. 39,306

Int. Cl.³ F16J *9/14*

U.S. Cl. 277—221 **14 Claims**

1. A piston ring comprising an elongated one-piece element having a cylinder contact surface, a side surface extending the length of said element and a pair of relatively movable ends including a first end and a second end, said first end having a groove including a pair of generally opposed walls, said walls being planar and parallel with respect one to the other and



being disposed at an angle of about 45° with respect to said ring side surface, the second end being receivable in said groove to prevent relative motion between the ends of the ring in directions normal to said side surface.

4,251,084

COLLETS

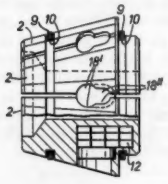
Reginald A. Franklin, Whitney, England, assignor to Crawford Collets Limited, England

Filed May 23, 1979, Ser. No. 41,796

Claims priority, application United Kingdom, Jun. 21, 1978, 27523/78

Int. Cl.³ B23B *31/20*

U.S. Cl. 279—1 ME **2 Claims**



1. In a collet a plurality of separate jaw-like segments, each segment having substantially radial faces spaced from the adjacent radial face of each adjacent segment, and a resilient plate-like separator located in the space between adjacent segments, said separator having opposed faces in engagement with the adjacent faces of the adjacent segments, the opposed faces of each separator being of ribbed construction with a grid-like arrangement of ribs, the ribs extending axially and radially of the collet, and each separator having a head part at its radially outer end and being attached to its associated segments by means of the head part so that the separator is resiliently deformed when a closing force is applied to the collet and exerts a bias which tends to restore the collet to its open condition when the closing force is removed, the adjacent segments having means defining undercut recesses, and the head part of each said separator being located in the undercut recesses formed in the adjacent segments.

4,251,085

SNOW RUNNERS FOR SHOPPING CART

Reginald Lageer, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

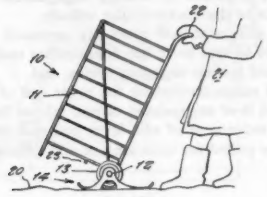
Filed Apr. 17, 1979, Ser. No. 30,960

Int. Cl.³ B62B *13/18*

U.S. Cl. 280—10 **2 Claims**

1. A shopping cart, comprising in combination a wire basket with transverse axle secured at its bottom, a wheel mounted on each end of said axle, said basket including a handle for pulling

or pushing, and a U-shaped snow runner pivotally mounted on said axle fitting around each said wheel, said runners being adjustable by each being comprised of first and second runner members that are pivotable between an operative position and a stored, out of the way position, a peg projecting sidewardly from opposite sides of said basket so to serve as a rest upon which said runners rest in said stored position, and opposite forward and rear ends of each said runner being upwardly



curved for guiding across a top of a snow, each said first member comprising a flat wearplate having an upturned flange on each opposite side thereof, said flanges each having a hole therethrough, said holes being aligned for fitting on one end of said axle wherein each said second runner member comprises a flat wear plate slidably held on an underside of each said first runner member wear plate by a wedge-shaped rib correspondingly shaped groove of the other said member and a pin means securing said members in a selected position.

4,251,086

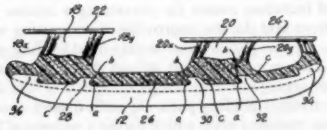
ICE SKATE

George C. Woolley, Pointe Claire, Canada, assignor to M. O. Sales Ltd., Ste-Adele, Canada

Continuation of Ser. No. 868,452, Jan. 10, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 100,902

Int. Cl.³ A63C 1/30

U.S. Cl. 280—11.12 **2 Claims**



1. A method of forming a skate blade and unitary plastic molded support for use with an ice skate, including the steps of providing a mold, locating a metal blade having a central section and front and rear sections with the front and rear sections at least having hook-like projections directed inwardly towards the central section of the blade, injecting hot thermoplastic material into the mold such that it flows about the top area of the skate blade and around the inwardly extending hook projections, cooling the central section of the mold adjacent the central section of the blade while maintaining higher temperatures at the front and rear sections of the blade and mold such that the central section of the plastics material will cool faster than the outer section thereby directing the contraction of the plastics material towards the central section as the front and rear sections are cooled, such that the flow of the plastics material flows around the inwardly directed hook so that the hook will engage in the plastics material after it is cooled.

4,251,087

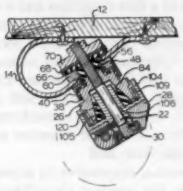
TRUCK APPARATUS FOR SKATE AND SKATEBOARD DEVICES

H. Gordon Hansen, Sunnyvale, Calif., assignor to Royalty Investors, Saratoga, Calif.

Filed Feb. 21, 1979, Ser. No. 13,626

Int. Cl.³ A63C 17/02

U.S. Cl. 280—11.28 **10 Claims**



1. Truck apparatus for skate and skateboard apparatus comprising:

an elongated kingpin means;

means for affixing one end of said kingpin means to the bottom of a load-carrying platform at a selected angle and including a member disposed midway along the length of said kingpin and having means forming a first friction surface and stop means;

wheel axle carriage means pivotally affixed to the other end of said kingpin means and adapted to rotate about the axis of said kingpin means, said carriage means having means forming a second friction surface and lug means adapted to engage said stop means when said carriage means is rotated a predetermined angle in either direction about said axis;

resilient drag sleeve and turn restoring means disposed between and in frictional engagement with said first and second friction surfaces; and

means for urging said carriage means toward said member so as to compress said resilient means between said first and second surfaces with a selected compression force such that said carriage means may be resistively and partially resiliently rotated about said axis within an angular range determined by the interaction of said stop means and said lug means and with a degree of freedom to turn determined by the compression of said resilient means.

4,251,088

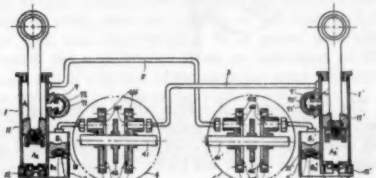
HYDRAULIC SUSPENSION SYSTEM FOR CAR

Bor L. Shyu, No. 208, Ching Feng Village, Jyi An Shiang, Huea Lian Shiann, Taiwan

Filed Dec. 26, 1978, Ser. No. 972,898

Int. Cl.³ B62D 9/02

U.S. Cl. 280—112 A **8 Claims**



1. A hydraulic suspension system for improving the stability and shock absorbing capacity of a vehicle during high speed turning on a supporting surface, the vehicle having a plurality

of supporting wheels including a left and a right wheel, at least one of said plurality of supporting wheels being turnable for turning the vehicle, the vehicle having a conventional spring suspension system which includes springs on opposite sides thereof mounted between said left and right vehicle wheels and the vehicle body, said hydraulic system comprising:

left and right cylinder units, respectively fixed between said body and said left and right wheels, each unit including a primary cylinder and a primary piston reciprocally sealingly movable in a first direction and a second direction in said primary cylinder, said primary piston separating said cylinder into a first chamber and a second chamber, said piston having opposing first and second surfaces respectively facing in said first and second directions;

first conduit means, responsive to left movement of said primary piston, for guiding therethrough fluid between said left cylinder unit second chamber and said right cylinder unit first chamber; and

second conduit means, responsive to movement of said right primary piston, for guiding therethrough fluid between said right cylinder unit second chamber and said left cylinder unit second chamber so that when left and right cylinder unit primary pistons are both moving in said second direction fluid in said left second primary chamber flows toward said right first chamber and fluid in said right second primary chamber flows toward said left first primary chamber; and

interrupter means, responsive to turning of said at least one turnable wheel, for blocking fluid flow through said second conduit means when said at least one turnable wheel turns to the left so as to prevent said left primary piston from moving in said second direction, and for blocking fluid flow through said first conduit means when said at least one turnable wheel turns to the right so as to prevent said right primary piston from moving in said second direction, fluid flow through only one of said first and second conduit means being blocked at one time, thereby preventing upward motion of said vehicle body and the one of said left and right wheels on the side of said vehicle toward which said at least one turnable wheel is turned.

4,251,089

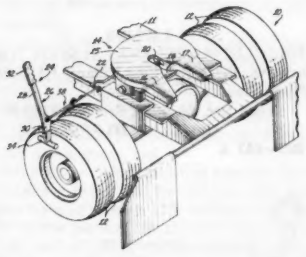
TRACTOR-TRAILER VEHICLE DECOUPLING TOOL

Michael G. Skaggs, 5628 W. Monte Vista, Phoenix, Ariz. 85035

Filed Apr. 20, 1979, Ser. No. 31,828

Int. Cl.³ B62D *53/06*

U.S. Cl. 280—433 **9 Claims**



1. The combination of a fifth wheel of the type used for demountably coupling the trailer to the tractor of a tractor-trailer vehicle and a tool for unlocking the fifth wheel to allow decoupling of the tractor and trailer, the combination comprising:

(a) a fifth wheel carried on the frame of the tractor between the rear wheels thereof, said fifth wheel adapted for lockably coupling the trailer to the tractor;

(b) a release handle on said fifth wheel and extending laterally therefrom transverse to the longitudinal axis of the frame of said tractor, said release handle formed in a hook-shaped configuration and upon being pulled will unlock said fifth wheel to allow decoupling of the trailer from the tractor; and

(c) a decoupling tool for use in unlocking said fifth wheel, said decoupling tool comprising,

I. an elongated lever bar,

II. a handle grip on one end of said lever bar,

III. a surface engaging means on the opposite end of said lever bar for forming a fulcrum about which said lever bar is movable in an arc when said surface engaging means is placed in bearing engagement with a side surface of the tractor-trailer vehicle,

IV. an elongated rod pivotably mounted on one end thereof to said lever bar intermediate said handle grip and said surface engaging means, and

V. hook means formed on the other end of said rod for looped over engagement of said release handle so that upon movement of said lever bar said release handle will be pulled for unlocking of said fifth wheel.

4,251,090

SAFETY SKI BINDING

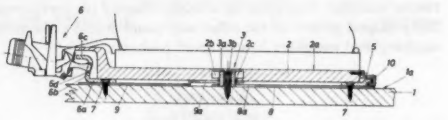
Erwin Weigl, Brunn am Gebirge, Austria, assignor to TMC Corporation, Baar/Zug, Switzerland

Filed Jan. 5, 1979, Ser. No. 1,364

Claims priority, application Austria, Jan. 5, 1978, 72/78

Int. Cl.³ A63C *9/086*

U.S. Cl. 280—618 **13 Claims**



1. In a safety ski binding comprising a sole plate pivotally connected to said ski about a vertical axis located approximately in the center thereof and adapted to receive a ski boot thereon, the longitudinal ends of said sole plate each engaging a ski-fixed holding part, a spring-loaded locking mechanism for holding said sole plate against rotation, said vertical axis being defined by an upstanding pivotal support part secured to said ski and including means for preventing a release of said sole plate from said ski, the improvement comprising wherein said pivotal support part and the two ski-fixed holding parts for said sole plate are each secured to said ski by only one fastening member arranged on the longitudinal axis of said ski, wherein said individual holding parts are each fixedly connected to a separate centering plate which permit a reciprocal longitudinal shifting therebetween during a bending of said ski, each centering plate having an elongated hole therein encircling said pivotal support part and forming together with said pivotal support part a centering mechansim, wherein said pivotal support part has an enlarged head received in a countersunk hole in said sole plate, which countersunk hole opens uupwardly and serves to limit the amount of vertical movement of said sole plate relative to said ski.

4,251,091

PASSIVE VEHICLE SAFETY BELT

Rüdiger Weissner; Wilfried Köke, both of Wolfsburg, and Günter Hoffmann, Gifhorn, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 3, 1978, Ser. No. 957,467

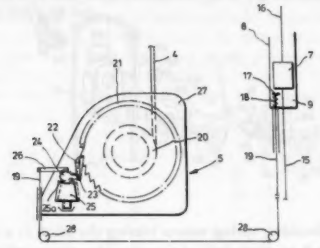
Claims priority, application Fed. Rep. of Germany, Nov. 11, 1977, 2750440

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **5 Claims**

1. In a passive safety belt for a motor vehicle, wherein there is provided a safety belt having a first end wound on an auto-

matic winding spool adjacent a vehicle seat, said spool being provided with an inertially operated locking device, and a second end connected to a slide carriage, said slide carriage being moveable along a track between a first passenger restraining position and a second passenger release position, the improvement wherein there is provided means for retaining



said inertial locking device in the unlocked position and for releasing said inertial locking device only when said slide carriage is in said first position said retaining and releasing means including activating means engaged by said slide carriage in said first position for releasing said inertial locking device.

4,251,092

PRESSURE SENSITIVE CARBONLESS DUPLICATING SYSTEMS AND THERMAL MARKING SYSTEMS

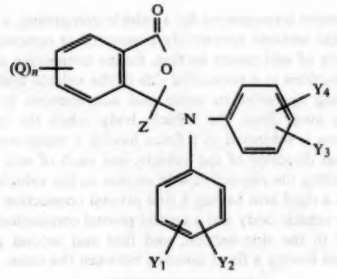
Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 821,926, Aug. 4, 1977, Pat. No. 4,182,714, which is a continuation-in-part of Ser. No. 755,376, Dec. 29, 1976, abandoned. This application Nov. 27, 1978, Ser. No. 963,955

Int. Cl.³ B41L *1/20*

U.S. Cl. 282—27.5 **13 Claims**

1. In a pressure-sensitive carbonless duplicating system or thermal marking system, a support sheet coated on one side with a color-forming substance comprising a compound having the formula



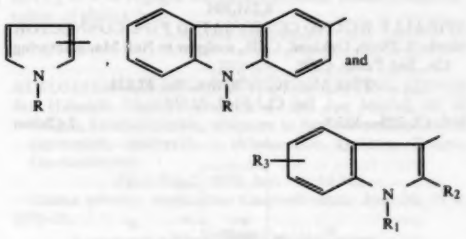
wherein:

Q is selected from the group consisting of di-lower-alkylamino, nitro, halo and COX where X is hydroxyl, benzyloxy, alkoxy having from 1 to 18 carbon atoms or OM where M is an alkali metal cation, an ammonium cation or a mono-, di- or trialkylammonium cation having from 1 to 18 carbon atoms;

n is 0; or 1 when Q is di-lower-alkylamino, nitro or COX; or from 1 to 4 when Q is halo;

Y_1, Y_2, Y_3 and Y_4 are the same or different and are selected from the group consisting of hydrogen, halo, hydroxyl, lower-alkoxy, alkyl having from 1 to 9 carbon atoms, phenyl-lower-alkyl, $COOR_4$ and NR_5R_6 where R_4 and R_5 are hydrogen or lower-alkyl and R_6 is hydrogen, lower-alkyl, cycloalkyl having from 5 to 7 carbon atoms, or lower alkanoyl;

Z is selected from the group consisting of



in which:

R is hydrogen or non-tertiary alkyl having from 1 to 4 carbon atoms;

R_1 is hydrogen, or non-tertiary alkyl having from 1 to 18 carbon atoms;

R_2 is hydrogen, phenyl or non-tertiary alkyl having from 1 to 4 carbon atoms; and

R_3 is hydrogen, non-tertiary alkyl having from 1 to 4 carbon atoms or non-tertiary alkoxy having from 1 to 4 carbon atoms.

4,251,093

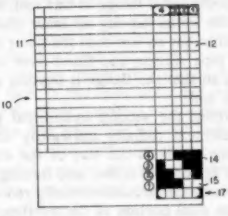
RESTAURANT CHECKS

Philip C. Tobin, Box 726, Bar Harbor, Me. 04609

Filed Feb. 2, 1979, Ser. No. 8,486

Int. Cl.³ B42D *15/00*

U.S. Cl. 283—60 A **10 Claims**



1. A new and improved restaurant check comprising:

sheet material check means substrate for receiving indicia;

a plurality of n vertical columns formed on said sheet for recording itemized costs in vertically aligned digit columns;

a plurality of n cell pairs formed on the sheet means below said vertical columns, said cell pairs arranged in a vertical stepwise array, each pair offset one cell from each adjacent pair, said stepwise array of 2n paired cells aligned beneath the n columns formed on said sheet so that a single cell of one pair of the stepwise array falls beneath the righthand column of the vertical columns;

whereby a two digit total of digit indicia entered in each vertical column can be recorded in a corresponding cell pair aligned one cell beneath and one to the left of said vertical column;

said stepwise array of paired cells formed on a plain or contrasting background without any adjacent cells in the area of the array thereby facilitating accuracy and avoiding confusion during addition operations using the check;

and a horizontal row of n+1 cells formed on said sheet means below said stepwise array of n pairs of cells, said horizontal row aligned with said columns and stepwise

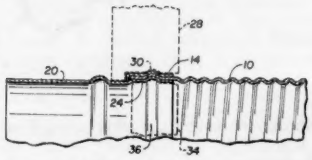
array whereby the total sum obtained by adding the two digit sums in the stepwise array can be entered into the horizontal row.

4,251,094

SPIRALLY WOUND CORRUGATED PIPE CONNECTOR

Mario R. Pinto, Oakland, Calif., assignor to Noll Manufacturing Co., San Pablo, Calif.

Filed May 10, 1979, Ser. No. 37,624
Int. Cl.³ F16L *13/14*
U.S. Cl. 285—382.5 **7 Claims**



1. A system for installing a device at the end of a spirally wound corrugated pipe section so that two or more such sections can be joined end to end to form a continuous pipe, said system comprising:

a connector element which includes a first portion adapted to connect to a corresponding portion of a second connector element and a second portion extending coaxially from the first portion, said second portion being cylindrical and having an outer diameter approximately equal to but no greater than the inside diameter of the corrugated pipe section, said second cylindrical portion being inserted within the end of said corrugated pipe section so that the first portion projects therefrom;

a collar having a cylindrical portion with an inwardly directed circumferential flange at one end, said cylindrical portion of the collar having an inner diameter approximately equal to but no less than the outer diameter of the corrugated pipe section and fitted over the end of said pipe section so that the flange is beyond said end of the pipe section; and

means for forcing the second cylindrical portion of the connector element radially outwardly about its entire circumference to crush the end of the corrugated pipe segment flat against the collar, said forcing means further including means for circumferentially radially outwardly distending an axial portion of the overlapping connector element, pipe section and collar in combination to form a bead, the crushing of the end of the corrugated pipe section and the bead forming a substantially air tight seal between the connector element and the pipe section.

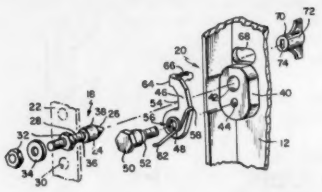
4,251,095

LATCH ASSEMBLY

Jerry C. Marino, and Edward C. Fortini, both of Sudbury, Mass., assignors to Data General Corporation, Westboro, Mass.

Filed Mar. 29, 1979, Ser. No. 24,897
Int. Cl.³ E05C *3/14*
U.S. Cl. 292—54 **15 Claims**

1. A latch assembly for removably mounting a cover plate to a cabinet containing an opening structured to receive a cover plate to cover the same, comprising at each of two respective sides of the cover plate and opening, a pilot having a tapered forward end and rearwardly thereof a shoulder perpendicular to its longitudinal axis, means to which the pilot is fixed to the cabinet structure in a position such that its tapered end extends from the cabinet structure through said opening substantially perpendicular to the plane of the opening, a receptacle secured to the inner side of the cover plate for receiving the pilot to position the cover plate in relation to the opening in the cabinet structure, a latch pivotally connected at one end to the cover plate for movement about an axis spaced from and parallel to the axis of the pilot in a plane at right angles to said axis and so positioned that when the pilot is engaged with the receptacle, the distal end of the latch will become engaged with the pilot



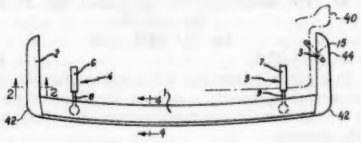
behind the shoulder, spring means biasing the latch in a direction to cause it to enter behind the shoulder recess when the cover plate is positioned to cover the opening and means at the distal end of the latch for withdrawing it from engagement with the shoulder recess to thus release the cover plate for removal from the cabinet.

4,251,096

BUMPER AND FIXINGS

Malcolm G. Stock, Nantwich, England, assignor to Rolls-Royce Motors Limited, Crewe, England

Filed Oct. 31, 1978, Ser. No. 956,924
Claims priority, application United Kingdom, Nov. 10, 1977, 46784/77
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—150 **7 Claims**



1. A bumper arrangement for a vehicle comprising: a center section, side sections operatively connected at opposite ends respectively of said center section, means connecting each of said side sections to a respective side of the vehicle body, said means being operative to cause said side sections to move outwardly away from the vehicle body when the bumper arrangement is subjected to a force having a component in a longitudinal direction of the vehicle, and each of said means for connecting the respective side section to the vehicle body comprises a rigid arm having a first pivotal connection at one end to the vehicle body and a second pivotal connection at the other end to the side section, said first and second pivotal connections having a fixed distance between the same.

4,251,097

DISPOSIBLE SCOOP AND CONTAINER FOR CLEANING UP OFFENSIVE MATERIAL

William B. Whitten, II, 28 Norwood St., Albany, N.Y. 12203

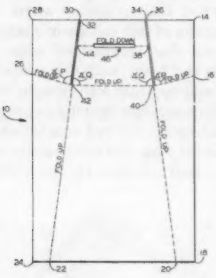
Filed Feb. 16, 1979, Ser. No. 12,600
Int. Cl.³ A47L *13/52*
U.S. Cl. 294—1 B **6 Claims**

1. A scoop, made of a single paperboard blank, comprising:

a central portion, which has a bottom wall and a back wall, with a first transverse crease separating the bottom wall from the back wall, said back wall having a top portion and a second transverse crease for allowing the top portion to be folded downward, and said back wall having a

slot extending partially along the second transverse crease;

a side portion, separated from the central portion by a longitudinal crease, said side portion having a side wall and a rear tab, said rear tab having a top corner, with a third transverse crease separating the side wall from the rear tab, and said longitudinal crease being slit along the edge of the rear tab;



such that when the back wall is folded up along the first transverse crease, the side portion is folded up along the longitudinal crease, the rear tab is folded inward along the third transverse crease, and the back wall is folded downward along the second transverse crease, then the top corner of the rear tab will partially project through the slot in the back wall thereby locking the scoop into an assembled position.

4,251,098

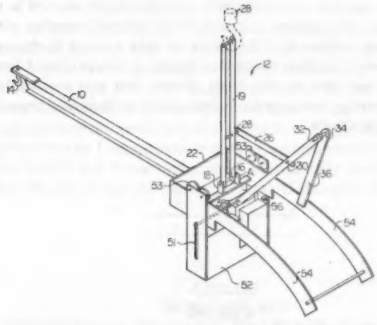
UNDER-THE-ROOF LOADER

Sidney I. Belinsky, 40 Waterside Plz., Apt. 29M, New York, N.Y. 10010

Continuation-in-part of Ser. No. 786,542, Apr. 11, 1977, abandoned. This application Dec. 4, 1978, Ser. No. 958,809

Int. Cl.³ B66C *1/00*

U.S. Cl. 294—67 AA **4 Claims**



1. The Under-the-Roof Loader (URL) for hoisting load by lifting line through suspended to it in one point elongated balanced boom with purely mechanical automatically balancing system, transfering boom inclination into reciprocating movement of moveable counterweight along the guides on said elongated boom, comprising: vertical element with articulated joint between its ends, upper end of said vertical element is adapted to receive said lifting line and lower end of said vertical element is connected through articulated joint with fulcrum axis on said elongated boom; intermediate lever, connecting said vertical element through its articulated joint, located between upper and lower ends, and pins, located on the ends of said intermediate lever, to driving lever through its articulated joint, located between upper and lower ends; said driving lever, which is hinged through its upper end to a fixed point on said elongated boom and through its lower end said driving lever is engaged with said moveable counterweight by means of sliding frog.

4,251,099

AUTOMATIC RELEASE DEVICE FOR LIFTING SLINGS

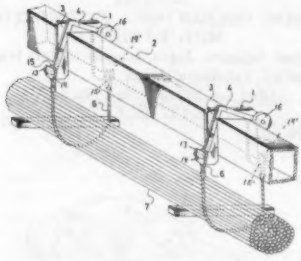
Jan Hubalek; Vladimir Doksansky, and Jan Michal, all of Prague, Czechoslovakia, assignors to Institut manipulacnich, dopravnich, obalovych a skladovacich systemu, Prague, Czechoslovakia

Filed Jul. 2, 1979, Ser. No. 53,955

Claims priority, application Czechoslovakia, Jun. 30, 1978, 4376-78

Int. Cl.³ B66C *1/38*

U.S. Cl. 294—75 **5 Claims**



1. An automatic sling release device which cooperates with a load supporting sling, comprising a load sustaining body, a first, sling engaging hook on the body, a sling releasing member movably mounted on the body, the releasing member having a portion thereof in the form of a second hook positioned close to the first hook and partially overlapping it, the second hook having an upper sling end-engaging face and a front thrusting face, in the basic unloaded position of the releasing member the front thrusting face projecting beyond the outer edge of the first hook on the load sustaining body, and yieldable means for constantly urging the releasing member toward its unloaded position whereby the second hook thrusts a sling end off the first hook when the load sustaining body is relieved of the pull of a load.

4,251,100

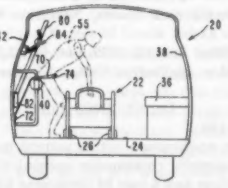
ADJUSTABLE SAFETY SEAT FOR AMBULANCES AND OTHER EMERGENCY VEHICLES

Paul J. Rolandelli, 405 W. 38th St., Wilmington, Del. 19802

Filed May 11, 1979, Ser. No. 38,080

Int. Cl.³ B60N *1/00*

U.S. Cl. 296—63 **17 Claims**



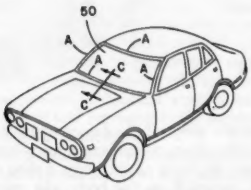
1. An adjustable safety seat for use in the patient compartment of an emergency vehicle to firmly support a medical attendant performing emergency medical services on a patient, comprising:

a pair of spaced, vertical support bars mounted adjacent to an interior wall in the patient compartment of the vehicle;
a seat member extending horizontally between said support bars and slidably mounted thereon for adjustment between different vertical positions;
means for locking said seat member on said support bars in its different vertical positions;
an adjustable backrest mounted on the interior wall of the vehicle and extending above said seat member to protect the medical attendant from injury during motion of the vehicle
said backrest being pivotally mounted on the interior wall of the vehicle and adjustable between different angular positions relative thereto; and
restraining means for securely holding the medical attendant against said seat member to permit him to safely perform emergency medical services on the patient while the vehicle is in motion.

4,251,101
MOLDING HOLDER FOR A WINDSHIELD OF A MOTOR VEHICLE

Shigeo Aotani, Fujisawa, Japan, assignor to Kato Hatsujo Company Limited, Yokohama, Japan

Filed Jul. 12, 1979, Ser. No. 57,036
Int. Cl.³ B60J *1/02*
U.S. Cl. 296—93 **2 Claims**



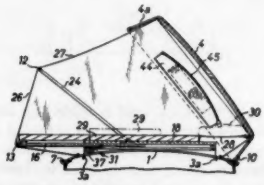
1. A molding holder for a motor vehicle comprising:
two members, each of said members comprising:
a fixed base to be coupled to a body panel;
a clasp extending from an edge of said fixed base, said clasp having a lengthwise groove in the inner side thereof of; and
a guide extending from an upper edge of said fixed base; and
a joint for connecting each of the two members together, whereby a complete molding holder is formed which is larger than either member singly, said joint comprising a tongue having a plurality of holes therein extending from one of said two members and a plurality of projections formed on the other of the two members to fit into said holes in said tongue.

4,251,102
ELEVATING ROOFS

David Lee, Northchurch House, Northchurch, Hertfordshire, England

Filed Jan. 10, 1979, Ser. No. 2,359
Claims priority, application United Kingdom, Jan. 19, 1978, 02168/78
Int. Cl.³ B60P *3/34*
U.S. Cl. 296—160 **6 Claims**

1. For use in conjunction with a vehicle having a roof containing a substantially rectangular opening defining a pair of longitudinal edges and a pair of transverse edges in said roof, an elevating roof comprising (A) a rigid substantially rectangular member which is adapted to be hinged along one edge of said roof, parallel to one of said longitudinal edges, for movement between (1) a lowered position covering said substantially rectangular opening and (2) a raised position where said rigid member provides one wall of a covered area, (B) a canopy of foldable material extending between corresponding edges of said rigid member and said substantially rectangular opening, said canopy being adapted to provide the other walls of said covered area when said rigid member is in the raised position, and (C) a framework comprising first and second generally U-shaped members comprising a pair of moveable arms and a bridge member attached to said arms at one end thereof, said moveable arms being arranged so that they can be urged to respective limit positions where they support an opposite wall portion of said canopy in a position substantially outwardly beyond that longitudinal edge of said opening which is opposite said hinge, such that a region of said canopy associated with said opposite wall portion overhangs beyond said substantially rectangular opening to provide, at least for a lower part of said roof a covered area substantially greater in transverse dimension than said substantially rectangular opening, the improvement wherein: (1) the arms of said first U-



shaped member each comprise a transversely slidable planar member supported in a plane above and substantially parallel to the plane of said opening and slidable from a stowed position directly over said vehicle roof to an extended position to one side of said vehicle; (2) the arms of said second U-shaped member are pivotably connected to respective planar members of said first U-shaped member; (3) the respective bridge members of said first and second U-shaped members are attached to said canopy at spaced positions opposite to said rigid member, and (4) including means for locking said first U-shaped member in said extended position such that when said rigid substantially rectangular member is raised and the bridge of said second U-shaped member is substantially simultaneously moved to a partially raised position and said first U-shaped member slid transversely outwardly, the limbs of said second U-shaped member pivot on their respective planar members of said first U-shaped member so that both of said first and second U-shaped members are urged simultaneously to their said respective limit positions.

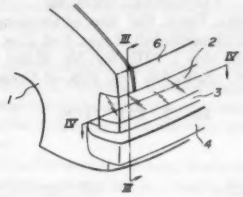
4,251,103
REAR BODY STRUCTURE OF A VEHICLE

Tomoo Nakajima; Shigeyuki Yamaoka, and Seiji Tanaka, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sep. 11, 1979, Ser. No. 74,326
Claims priority, application Japan, Sep. 21, 1978, 53-128705[U]
Int. Cl.³ B62D *25/00*
U.S. Cl. 296—195 **5 Claims**

1. A rear body structure of a vehicle including a rear combination lamp whose lateral ends extend on side surfaces of the rear body structure, comprising rear fenders which are depressed forwardly with a depth corresponding to a distance

that the lateral ends of the rear combination lamp extend on said side surfaces of the body structure, and a rear end panel



being flush with depressed surfaces of said rear fenders to form a mounting surface for said rear combination lamp.

4,251,104

MOUNTING RING FOR SUNSHINE ROOF ASSEMBLY

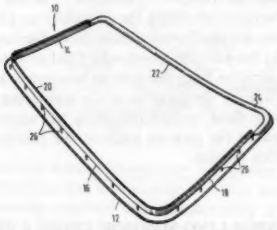
Gordon J. Holt, Birmingham, England, assignor to Britax Weathershields Limited, Birmingham, England

Filed Oct. 23, 1979, Ser. No. 87,516

Claims priority, application United Kingdom, Feb. 19, 1979, 5709/79

Int. Cl.³ B60J 7/00

U.S. Cl. 296—216 **6 Claims**



1. A mounting ring for installing a sunshine roof assembly in an opening in the roof of a vehicle comprising a substantially rectangular frame, each side of which has a laterally extending first flange and a second flange attached to the inner edge of the first flange, the second flange on three of the sides extending substantially perpendicular to the first flange, so that such sides have an L-shaped cross-section, and the second flange on the fourth side being folded back substantially parallel to the first flange, so that the fourth side has a U-shaped cross-section.

4,251,105

MOBILITY AID

Alfred W. Barker, "Panorama", Petit Port, St. Brelade, Jersey, Channel Islands

Filed Jul. 3, 1979, Ser. No. 54,424

Claims priority, application United Kingdom, Jul. 5, 1979, 28967/79

Int. Cl.³ A61H 3/04

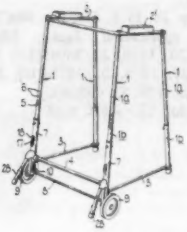
U.S. Cl. 297—6 **15 Claims**

1. A mobility aid comprising:

(a) a frame having two front legs and two rear legs;

(b) a ground-engaging wheel on each front leg, the axes of the wheels being movable in unison in the direction of the lengths of said front legs;

(c) one-way wheel-driving means responsive to upwards movement of said wheel axes to cause forward rotational motion of the wheels; and



(d) resilient means acting to urge said wheel axes downwardly of the front legs.

4,251,106

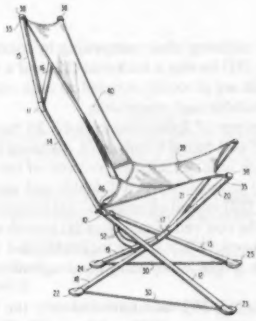
COLLAPSIBLE LOUNGING CHAIR

Bruno J. Gilbert, 281 Kenmore St., Glasgow G41 2QX, Scotland

Filed Aug. 30, 1979, Ser. No. 71,254

Int. Cl.³ A47C 4/00, 5/10

U.S. Cl. 297—18 **9 Claims**

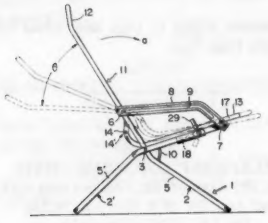


1. In a lounging chair, the combination including a first tubular frame means having an inverted V-shaped portion at one end, the free ends of the inverted V-shaped portion defining the front legs, an X-shaped second tubular frame means, two of the tubular elements of the second frame means defining the rear legs, an elongated web of flexible sheet material forming the seat and back of the chair, the X-shaped frame means being downwardly and rearwardly tilted, means to detachably secure one end of the web to the upwardly projecting ends of the X-shaped frame means, the apex of the inverted V-shaped portion of the first frame means being disposed above the medial portion of the X-shaped frame means and the tubular elements of the inverted V straddling the tubular elements of the X-shaped frame means and being downwardly and forwardly tilted to define the front legs, the first frame means also including a back supporting extension projecting upwardly from the apex of the V-shaped portion, means to detachably secure a medial portion of said web to the first frame means adjacent said apex to define the seat, means to detachably secure the other end of the web to said extension to define the back, and means to connect the extremities of the front legs to the extremities of the rear legs to prevent collapse of the chair and to permit limited tilting of both said frame means to provide simulated rocking motion by the occupant of the chair.

4,251,107
COLLAPSIBLE RECLINING CHAIR

Reiji Sato, Tokyo, Japan, assignor to Sugatsune Industrial Co., Ltd., Tokyo, Japan

Filed Sep. 28, 1978, Ser. No. 946,759
Claims priority, application Japan, Mar. 20, 1978, 53/36043[U]; Mar. 20, 1978, 53/36045[U]; Mar. 29, 1978, 53/40555[U]; Mar. 29, 1978, 53/40556[U]; Mar. 29, 1978, 53/40557[U]; Mar. 29, 1978, 53/40558[U]
Int. Cl.[2] A47C *4/00*
U.S. Cl. 297—19 1 Claim

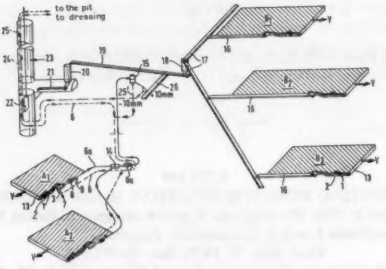


1. A collapsible reclining chair comprising in combination:
(a) a chair body (11) having a back-rest (12) and a seat portion (13) which are pivotally coupled to each other so as to be freely foldable and extendable;
(b) a stool composed of frame members (2, 2') having side sections (5, 5') said frame members (2, 2') being pivotally coupled to each other at suitable positions of the side bar sections (5, 5') so as to be freely foldable and extendable, said back-rest (12) of said chair body (11) being rotatably pivoted onto the rear end of said stool (1) in such a manner that said back-rest (12) is freely inclinable and said seat portion (13) is freely movable in the longitudinal direction; and,
(c) roller holders (18, 18') each mounted onto the opposite sides of said seat portion (13) and having the rear ends thereof opened, and rollers (19, 19') fitted onto a roller shaft (20, 20') with a stopper mechanism (24), said roller shaft (20, 20') being mounted onto each side of said side bar sections (5, 5') of one of said frame members, said rollers (19, 19') being removably fitted into said roller holders (18, 18') through the open ends thereof in such a manner that the rollers can be adjusted by means of said stopper mechanism (24) to a desired position in said roller holders (18, 18') and said chair body is freely rotatable after said rollers (19, 19') are disengaged from said roller holders (18, 18') said stopper mechanism comprising a locking pin which is passed through one of said roller shafts to be inserted into the roller holder corresponding thereto so that said locking pin is removably engageable with one of a plurality of pin holes successively formed longitudinally in the inner side wall of said corressponding roller holder, a cylindrical cam having a cam face on the outer side thereof and mounted onto the outside of one of said side bar sections coaxially with said one of the roller shafts, said locking pin passing through said cam and being provided with a cam follower at the outer part thereof extending outside said cam, the further outer part of said locking pin being bent so as to form a lever for a handle, and a cover placed over said cam and cam follower.

4,251,108
METHOD OF AND AN ARRANGEMENT FOR LONGWALL MINING

Hermann H. Nocke, Essen, Fed. Rep. of Germany, assignor to Ruhrkohle Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed May 2, 1979, Ser. No. 35,504
Claims priority, application Fed. Rep. of Germany, May 8, 1978, 2820020
Int. Cl.[3] E21C *35/20*
U.S. Cl. 299—8 39 Claims

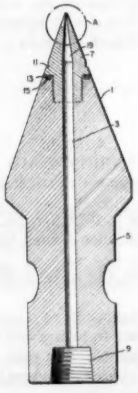


1. In a method of longwall mining, the steps of removing material from a longwall mining face; transporting the removed material in the condition in which it was removed from the face and in dry state, in direction rearwardly away from the face; comminuting the transported material to obtain particles of a predetermined size; admitting the particles into a bunker at a pick-up location remote from the mine face; discharging the particles from the bunker into a hydraulic fluid so as to entrain and convey the particles from the pick-up location to a separating location; separating the particles at the separating location from the hydraulic fluid; and recirculating the separated hydraulic fluid back to the pick-up location for entrainment of additional particles thereat.

4,251,109
DUST CONTROLLING METHOD USING A COAL CUTTER BIT

Wallace W. Roepke, Excelsior, Minn., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Oct. 3, 1979, Ser. No. 81,506
Int. Cl.[3] E21C *7/10*
U.S. Cl. 299—12 6 Claims



1. A method of controlling the dust generated by a rotatable

head cutting machine having material cutting bits on the head comprising the steps of:

(1) providing a source of water pressurized to at least 2,000 but, less than 5,000 psi., which is conveyed through an internal bit conduit to where it is discharged no more than ½ of an inch from the cutting edge of the bits;

(2) controlling the discharge of said pressurized water such that it begins shortly before the bits contact the coal bearing material's crushing zone and ends after contact therewith; and

(3) controlling the amount of water discharged from each of the machine's cutting bits by preselecting an orifice discharge diameter whose selection is a function of the material being cut and the discharge pressure.

4,251,110

MINERAL MINING INSTALLATION

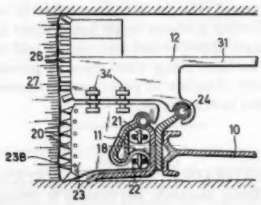
Klaus Beckmann, Lünen, and Hans-Theodor Grisebach, Unna, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhütte Westfalia, Lünen, Fed. Rep. of Germany

Filed Dec. 7, 1978, Ser. No. 967,458

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1977, 2754381

Int. Cl.³ E21C *25/60*

U.S. Cl. 299—17 **23 Claims**



1. A mineral mining installation comprising a mechanical winning machine and a hydraulic winning machine, the hydraulic winning machine having a plurality of high-pressure nozzles and a high-pressure pump for supplying the nozzles with high-pressure hydraulic fluid, wherein means are provided for moving each winning machine independently of the other along a mineral face, and wherein detachable coupling means are provided for coupling the two winning machines together for conjoint movement along the mineral face, the mechanical winning machine having cutter bits for mechanical mineral winning and high-pressure nozzles for hydraulic mineral winning, means being provided for supplying said nozzles of the mechanical winning machine with high-pressure hydraulic fluid from the pump of the hydraulic winning machine when the two winning machines are coupled together.

4,251,111

RESONANT BEAM FOR TOOL DRIVING APPARATUS

Raymond A. Gurries, Reno, Nev., assignor to The Gurries Company, Sparks, Nev.

Continuation-in-part of Ser. No. 973,187, Dec. 26, 1978, and Ser. No. 905,348, May 12, 1978, abandoned. This application Mar. 30, 1979, Ser. No. 25,485

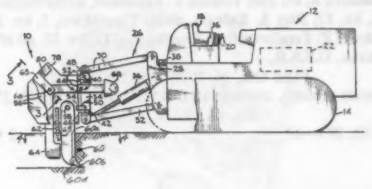
Int. Cl.³ A01B *35/00*

U.S. Cl. 299—37 **26 Claims**

1. Power apparatus for driving a tool or other member which comprises:

a resonant member in the form of an angle beam having two divergent legs meeting at a juncture and configured to exhibit a single central vibrational node at said juncture when restrained, and anti-nodes at the ends of said angle beam;

means supporting said angle beam at said juncture so that the end of one leg lies adjacent the tool within striking distance thereof; and



means for energizing at least near resonant vibration of said beam whereby the end of said one leg periodically imparts a driving force to the tool.

4,251,112

APPARATUS FOR PIVOTALLY POSITIONING A CLEARING SHIELD FOR A DRUM-CUTTER MINING MACHINE

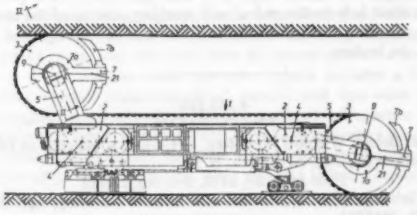
Rolf Krause, Essen, Fed. Rep. of Germany, assignor to Geb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H., Bochum, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,790

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1978, 2824475

Int. Cl.³ E21C *27/24, 35/20*

U.S. Cl. 299—45 **5 Claims**



1. In an underground mining machine having a pivot arm supporting a cutter drum to rotate about an axis for working a mine face, the combination therewith of a clearing shield apparatus including a clearing shield spaced outwardly from the periphery of the cutter drum, holder means movable about said axis for carrying said clearing shield, said cutter drum including support means to carry said holder means, and a rotary actuator means supported to extend from within said cutter drum and coupled to pivot said holder means about said axis relative to said support means for positioning the clearing shield about the outer periphery of said cutter drum.

4,251,113
HAMMER FOR BREAKING STRONG ABRASIVE MATERIALS

Leonid A. Mitin, Morskoi prospekt, 62, kv. 14; Petr Y. Fadeev, ulitsa Russkaya, 25, kv. 204; Vladimir Y. Fadeev, ulitsa Tereshkovi, 6, kv. 180; Vladlen V. Korobkov, ulitsa Shljuzovaya, 12, kv. 17; Rim A. Kulagin, ulitsa Tereshkvoi, 2, kv. 22, and Nikolai P. Ermilov, ulitsa Rossiiskays, 12, kv. 56, all of Novosibirsk, U.S.S.R.

Filed Oct. 16, 1979, Ser. No. 85,282
Claims priority, application U.S.S.R., Jan. 15, 1979, 2703402
Int. Cl.[3] E21C *37/24*
U.S. Cl. 299—69 2 Claims

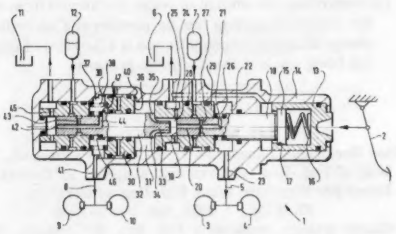
1. A hammer for breaking down strong abrasive materials comprising:
- a body;
- a ram inserted into said body with a provision for reciprocating and having a socket in its front end;
- a drive for reciprocating said ram;
- a tool for breaking down the material by the blows dealt in the process of reciprocation of said ram, said tool having a shank and a working portion and secured by its shank in said ram socket;
- the end of said tool shank and the matching bottom of said ram socket, both having the shape of matching spherical surfaces;
- an elastic gasket installed in said ram socket and separating said tool shank and ram socket;
- side surfaces of said tool shank and said ram socket made in the form of truncated cones whose larger base faces said working portion of the tool and the angles of their cones are smaller than the angles of friction between the adjoining surfaces;
- a blind hole in the end of said working portion of the tool, ensuring better penetration of said tool into the material to be broken.

4,251,114
BRAKE VALVE

Juan Belart, Walldorf, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,432
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1978, 2818533
Int. Cl.[3] B60T *15/02*
U.S. Cl. 303—6 A 14 Claims

1. A brake valve comprising:
- a housing having a longitudinal axis;
- a first control spool disposed in said housing coaxial of said axis to connect a first brake circuit to a first unpressurized reservoir in its rest position and to connect said first brake circuit to a first fluid source in its actuated position;
- a second control spool disposed in said housing coaxial of said axis and in tandem relation with said first control spool to connect a second brake circuit to a second unpressurized reservoir in its rest position and to connect said second brake circuit to a second fluid source in its actuated position;
- a brake pedal coupled to said first control spool for mechanical actuation thereof;
- a pressure chamber disposed in said housing in permanent communication with said first brake circuit for hydraulically actuating said second control spool, said second control spool having a first effective surface in said pressure chamber; and

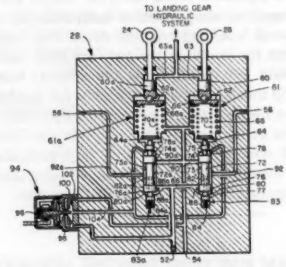


- an annular piston disposed to encircle and slidably sealed to the outer surface of said second control spool, said annular piston having disposed on opposite ends thereof two additional opposed effective surfaces, a first of said two additional effective surfaces being acted upon by pressure in said pressure chamber and a second of said two additional effective surfaces being acted upon by pressure in a counter-pressure chamber in permanent communication with said second brake circuit.

4,251,115
HYDRAULIC BRAKING SYSTEM

Kilbourne H. Knox, Burbank, and Stanley R. Bluhm, Manhattan Beach, both of Calif., assignors to Crane Co., N.Y.

Continuation-in-part of Ser. No. 346,742, Apr. 2, 1973, Pat. No. 4,121,874. This application Oct. 23, 1978, Ser. No. 953,866
Int. Cl.[2] B60T *8/06*
U.S. Cl. 303—10 8 Claims



1. A hydraulic braking system for a vehicle including braking means responsive to hydraulic pressure for decelerating the vehicle, a hydraulic pressure source for supplying system hydraulic pressure, braking control means for sensing deceleration of the vehicle and generating a graking control signal, and a hydraulic relay valve for converting system hydraulic pressure into braking hydraulic pressure, said relay valve comprising:
- a system hydraulic pressure first cavity;
- a braking hydraulic pressure first cavity;
- mechanically and hydraulically actuable first metering valve positioned between said cavities, said metering valve including a medial and distal pair of axially-aligned lands having different diameters, with an annular chamber de-

fined between each medial and distal land, one of said chambers being provided with system hydraulic pressure; modulating means for reducing braking hydraulic pressure generated by said relay valve in response to said braking control signal, said modulating means being hydraulically connected to the other of said annular chambers so that the axial position of said control valve is adjusted upon modulation of said modulating means to reduce the braking hydraulic pressure generated by said relay valve.

4,251,116
FLUID BRAKING SYSTEMS

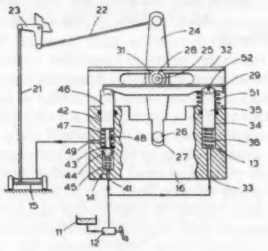
Alastair J. Young, Kenilworth, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 25, 1979, Ser. No. 42,556

Claims priority, application United Kingdom, May 31, 1978, 25729/78

Int. Cl.³ B60T *8/22*

U.S. Cl. 303—22 R **6 Claims**



1. A pressure regulator for a vehicle braking system through which fluid under pressure is supplied to actuate wheel brakes and which includes means to limit brake pressure to a proportion of applied pressure dependent on the vehicle loading, said regulator comprising:

a housing;

first piston means located in the housing to be responsive to brake pressure;

second piston means located in the housing to be responsive to applied pressure;

a beam member acted on by said first and second piston means;

pre-loaded resilient means acting on said beam independently and conjointly with said second piston means;

a fulcrum member supported by said housing and providing a fulcrum for said beam member intermediate said first and second piston means, means being provided for the position of said fulcrum to be dependent on vehicle loading;

and valve means responsive to the angular position of said beam member to control fluid pressure in the regulator to control brake pressure.

4,251,117
HYDRAULIC PRESSURE CONTROL VALVE FOR DOUBLE PIPING BRAKING SYSTEM

Hitoshi Kubota, Fujisawa, and Katsuyuki Yoshizawa, Hachioji both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

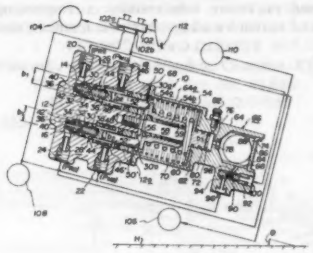
Filed May 7, 1979, Ser. No. 36,723

Claims priority, application Japan, May 12, 1978, 53-55456

Int. Cl.³ B60T *8/26*

U.S. Cl. 303—24 F **9 Claims**

1. A hydraulic pressure control valve assembly for a double piping braking system of a wheeled vehicle, comprising two parallelly arranged proportioning valve assemblies which are respectively provided with plungers which are axially movable in a direction against a common spring in response to application of hydraulic pressure to respective inlet ports to control the magnitude of hydraulic pressure in respective outlet ports, which is characterized by a deceleration sensing valve assembly which detects deceleration of the vehicle and



operates to increase the load applied to said common spring in reverse proportion to the degree of deceleration of the vehicle.

4,251,118
SWITCHING CIRCUIT FOR THE DISABLING OF SPURIOUS SENSOR SIGNALS

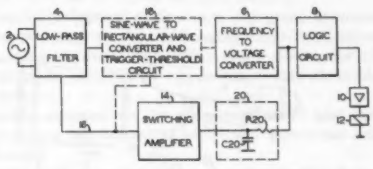
Johann Rothen, Nordstemmen, and Gunther Singbartl, Hanover, both of Fed. Rep. of Germany, assignors to WABCO Westinghouse GmbH, Hanover, Fed. Rep. of Germany

Filed Aug. 16, 1978, Ser. No. 934,241

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739173

Int. Cl.³ B60T *8/00*

U.S. Cl. 303—91 **8 Claims**



1. A control circuit for rendering spurious sensor signals ineffective to an anti-skid vehicle braking system having at least one pickup device for sensing the rotating conditions of at least one vehicle wheel, the pickup device is connected to an analog processing stage and to a logic circuit for obtaining brake pressure control signals, characterized in that said analog processing stage includes a controllable frequency dependent low-pass filter, said low-pass filter is connectable to a sine-wave to rectangular-wave converter which includes a frequency control trigger-threshold circuit, said sine-wave to rectangular-wave converter is connectable to a frequency to voltage converter, said frequency to voltage converter is connectable to a switching amplifier, said switching amplifier is connectable to said low-pass filter and said trigger-threshold circuit.

4,251,119
GAS BEARING FOR RAPIDLY ROTATING PARTS

Alfons Spies, Munich, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Continuation of Ser. No. 785,584, Apr. 4, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,625

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1976, 2616132

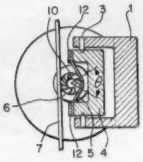
Int. Cl.³ F16C *35/00*

U.S. Cl. 308—9 **12 Claims**

1. A gas bearing including a foil bearing for a rotatable member in a textile machine comprising:

a foil;

means for fixedly supporting the foil, said support means including first and second fixedly mounted, spaced support surfaces configured to provide the foil with a predetermined curvature substantially corresponding to the radius of curvature of the rotatable member; and



means for fixedly securing the foil to the first and second support surfaces such that the foil is made to conform to the support surfaces and to assume a predetermined curvature substantially corresponding to the radius of curvature of the rotatable member, even in the absence of contact with the rotatable member.

4,251,120

SCREW FASTENED CLAMPING NECK ATTACHMENT FOR AN ELECTRICAL HAND OPERATED DRILL

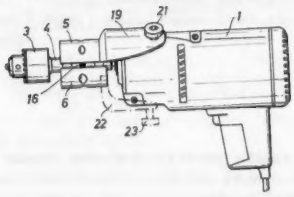
Robert Wolff, im Kiesacker, 5446 Engeln, Fed. Rep. of Germany

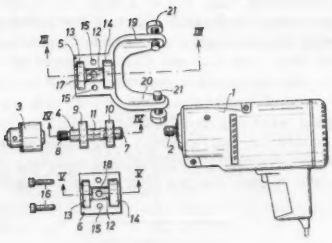
Filed Feb. 8, 1979, Ser. No. 10,487

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1978, 2852327

Int. Cl.³ F16C *35/06*

U.S. Cl. 308—22 **8 Claims**





1. A clamping neck attachment for clamping onto the housing of a neckless electrical hand operated drilling machine which is provided with a short rotary shaft fitted with a threaded collar, said shaft projecting from the housing of the drilling machine, comprising:

an extension shaft formed with threaded connecting means at its rear end to fit it to said threaded collar and formed with a threaded section at the other end;

antifriction bearing means surrounding said extension shaft and fixed thereon;

two semi-cylindrical bushing means surrounding the extension shaft and provided with lateral holes for screws to clamp the two bushing means on said antifriction bearing means;

at least one of said semi-cylindrical bushing means formed at its back end with immobilizing arcuately shaped arms in open Y form to fit close to said housing; and

said bushing means having threaded openings at the arm ends for set screws to immobilize and fix the bushings to said housing unit whereby the screw fastened bushing means constitute an extending neck for encasing said extension shaft of the attachment.

4,251,121

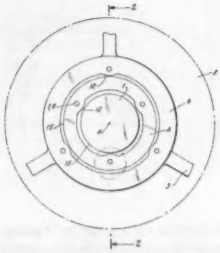
FRICTION BEARING FOR CYLINDERS IN A PRINTING PRESS

Hans Johne, Radebeul, and Arndt Jentzsch, Coswig, both of German Democratic Rep., assignors to Veb Polygraph Leipzig Kombinat für Polygraphische Maschinen und Ausrüstungen, Leipzig, German Democratic Rep.

Filed Aug. 29, 1979, Ser. No. 70,841

Int. Cl.³ F16C *17/02, 25/02*

U.S. Cl. 308—37 **4 Claims**



1. A friction bearing for a journal of a cylinder in a printing press, comprising a bearing block; a bearing sleeve disposed in said block for slidably supporting said journal; a plurality of axially directed cylindrical bores passing through said sleeve; and a plurality of tapering pins driven into said bores to expand discrete portions of the bearing surface of said sleeve.

4,251,122

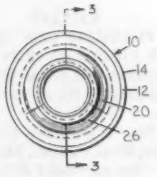
SELF ADJUSTING BEARING ASSEMBLY

Albert R. McCloskey, Fairfield, Conn., assignor to Incom International Inc., Pittsburgh, Pa.

Continuation of Ser. No. 451,523, Mar. 15, 1974, abandoned. This application Jun. 6, 1975, Ser. No. 584,303

Int. Cl.³ F16C *9/06, 23/04, 25/04, 43/02*

U.S. Cl. 308—72 **1 Claim**



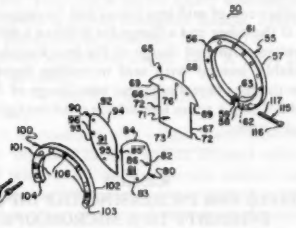
1. A spherical bearing assembly having an inner race member and an outer race member, the inner surface of the outer race member being a concave spherical surface, the outer surface of the inner member being a complementary convex spherical surface, the inner member including a hollow spool member having a smooth inner cylindrical surface and having

first threaded portion disposed on its outer surface and at least three spherical segments, each segment having a partially spheroidal outer surface and partially cylindrical inner surface, said surfaces being connected by planar surfaces on radial planes passing through an imaginary center line of a cylinder on which said partially cylindrical inner surface is formed and each segment having parallel sloped grooves on the inner surface terminating in the radial planes whereby when the segments are assembled by placing them within the outer race member such that their outer spherical surfaces are in bearing contact with said inner concave surface and each of said spherical segments are in an abutting relation, the inner surfaces of said spherical segments defining a central bore, the grooves in their inner surfaces form a continuous annular groove which forms a second helically threaded portion on the inner surfaces complementary to said first threaded portion, said segments disposed on and interlocked with said spool member and interlocked together solely by the registration of said first threaded portion in said complementary second threaded portion, whereby during assembly the spool is turnable within the segments with the first threaded portion moving along the second threaded portion, the spool member and the spheroidal segments together forming the inner race member, and the inner surface of the inner race member is the smooth inner cylindrical surface, whereby machine elements may be mounted in the smooth inner cylindrical surface of the inner race member and in which said spool member's axial length is somewhat greater than the axial length said bore such that said spool member, when threaded in a meshing relationship with said spherical segments, a portion of said threaded spool will extend beyond one of the lateral faces defined by the spherical segments, said extension of said spool member being adapted to receive a threaded nut-like member to further lock said spool member and said spherical segments in their respective operational positions, and wherein said spool member has a hub portion formed integrally on one end thereof, said hub portion having an inner lateral surface, said spherical segments defining an opposing lateral surface, said hub portion inner lateral surface adapted to abut said lateral surface of said spherical segments thereby further locking said spherical segments in their operational position.

4,251,123
GLOVE BOX SHIELD

Larry W. Brackenbush, and Glenn R. Hoenes, both of Richland, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 4, 1979, Ser. No. 36,257
Int. Cl.³ A61G *11/00*; G06D *17/00*
U.S. Cl. 312—1 **17 Claims**

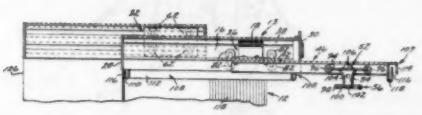


1. A shield for an opening in a container housing radioactive material comprising two spaced-apart clamping members, at least one of said members having dimensions larger than the opening, two flexible and resilient side flaps oppositely disposed between said clamping members having the free edges thereof overlapping, a center flap between said clamping members having a free edge thereof extending past the intersection of said side flap free edges, said side flaps and said center flap having a material therein substantially impervious to radiation from the radioactive material, and means for maintaining said clamping members together and in position over the container opening.

4,251,124
TELESCOPING CLOSET

Everett Emanual, 1408 S. Washington, Compton, Calif. 90221

Filed May 21, 1979, Ser. No. 41,016
Int. Cl.³ A47F *5/08*; A47G *5/00*
U.S. Cl. 312—4 **8 Claims**



1. A telescoping closet for mounting in a three walled, open faced cubicle comprising:

an enclosed hanging wardrobe having an upper portion, a front, and sides, and suspended from elevated supports located on walls of said cubicle on either side of the open face thereof, said wardrobe including a drapery track extending about said upper portion at the front and sides thereof, a pair of openable draw drapes located on either side of the center of the front of said hanging wardrobe and closeable at the center of the front of said hanging wardrobe to form a laterally encompassing enclosure, and drapery draw means for drawing said drapes together at the front of said wardrobe and for alternatively pulling said drapes apart rearwardly along the sides of said hanging wardrobe to expose the front thereof,

horizontally disposed guide means interposed between said elevated supports and said hanging wardrobe to allow said hanging wardrobe to be reciprocally drawn out of said cubical in cantilevered suspension on said elevated supports,

a carrier mounted on the upper portion of said hanging wardrobe for horizontal reciprocal movement relative thereto,

a carriage track mounted beneath and extending forwardly from said carrier and reciprocally moveable relative to said hanging wardrobe when said draw drapes are opened,

a carriage mounted for reciprocal movement along said carriage track, and

a horizontally disposed clothes rack suspended from said carriage for movement into and out of said hanging wardrobe.

4,251,125
SCANNING OPTICAL SYSTEM INCLUDING AN AFOCAL SYSTEM

Kazuo Minoura, Yokohama, and Masaaki Ishii, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 863,439, Dec. 22, 1977, abandoned. This application Feb. 23, 1979, Ser. No. 16,163
Claims priority, application Japan, Dec. 28, 1976, 51-159313; Feb. 4, 1977, 52-11277
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.5 **8 Claims**

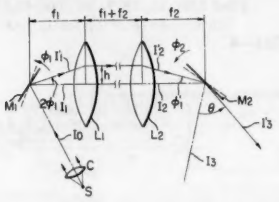
1. A scanning optical system comprising:

an afocal system including a first lens group having a focal length f_1 and a second lens group having a focal length f_2, which afocal optical system brings the object point on its objective field side and the image point on the image field side into an optically conjugate, positional relation;

a first deflecting member of the constant angular velocity type disposed in the vicinity of said object point on the

objective field side of the afocal optical system to scan the beam;

a second deflecting member of the constant angular velocity type, disposed in the vicinity of said image point on the image field side of the optical system within a plane substantially equal to the plane formed by the beam scanned by said first deflecting member;



first optical means for directing a parallel beam to be incident on said first deflecting member;

second optical means for directing the beam coming from said second deflecting member to a surface to be scanned;

said first lens group and second lens group having no distortion, and said second optical means being an image forming lens with focal length of f_3 and the following characteristic;

$$\Delta y' = f_3[2(\beta + m)\phi_1 \frac{\tan(2m\phi_1) + \beta\tan(2\phi_1)}{1 - \beta\tan(2m\phi_1) \cdot \tan(2\phi_1)}].$$

where:

Δ is the distance between a position of a beam image formed on the surface to be scanned and a reference position at which the beam image would be formed if the image forming lens had no distortion:

$\beta = f_1/f_2$

$m = K_1/K_2$, where K_1 is an angular velocity of said first deflecting member, and K_2 is an angular velocity of said second deflecting member;

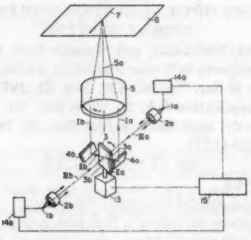
ϕ is a rotational angle of said first deflecting member.

4,251,126

LIGHT BEAM SCANNING DEVICE WITH OPPOSED DEFLECTING SURFACES

Kazuo Minoura, Yokohama, and Setsuo Minami, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1979, Ser. No. 45,843
Claims priority, application Japan, Jun. 6, 1978, 53/68056
Int. Cl.³ G02B *27/17*
U.S. Cl. 350—6.6 **4 Claims**



1. A light beam scanning device comprising:

(a) a rotationally vibrating deflector having at least two deflecting and reflecting surfaces, and the first deflected light beam plane to be formed with lapse of time by the light beam immediately after it is deflected by the first deflecting and reflecting surface of said deflector at its forward motion and the second deflected light beam plane to be formed with lapse of time by the light beam immediately after it is deflected by the second deflecting and reflecting surface different from the first deflecting and reflecting surface at the backward motion of said deflector being placed at substantially symmetrical positions wiht respect to the rotational axis of said deflector;

(b) a scanning surface to be scanned by the light beam deflected by said deflector;

(c) an image-forming optical system interposed between said deflector and said scanning surface to focus the light beam from said deflector on said scanning surface;

(d) first optical means which causes the light beam deflected by the deflecting and reflecting surfaces of said deflector to enter said image-forming optical system at the time of forward motion of said deflector; and

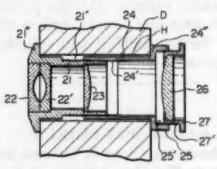
(e) second optical means which leads the light beam deflected by said deflector, at the time of backward motion of said deflector which oscillates in the direction opposite to that at the time of its forward motion, within a plane parallel with a deflected light beam plane formed with lapse of time by the light beam entering the image-forming optical system through said first optical means at the time of its incidence.

4,251,127

WIDE-ANGLE DOOR VIEWER

Takeyoshi Yamaguchi, 20-24, Tsurumaki 5-chome, Setagaya-ku, Tokyo 154, Japan

Filed Jun. 15, 1979, Ser. No. 48,812
Int. Cl.³ G02B *7/02*
U.S. Cl. 350—69 **6 Claims**



1. A wide angle door viewer comprising a lens barrel enclosing therein an optical system including objective and eyepiece lens systems arranged in a reverse Galileo type and having a flange on the peripheral edge at one end holding said objective system, a mounting barrel coaxially slidably jointed at one end with the other end of said lens barrel and having on the peripheral edge at the other end a flange for holding a door or the like in cooperation with said flange of the lens barrel, and a zoom barrel slidably jointed with said mounting barrel in coaxial relation to the lens barrel adjacent said flange of the mounting barrel and holding a zoom lens which receives light beam from the optical system.

4,251,128

APPARATUS FOR INCREASING THE INPUT LIGHT INTENSITY TO A MICROSCOPE

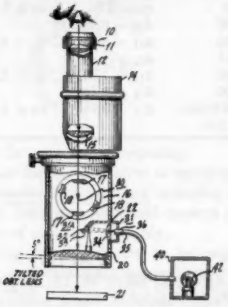
Richard E. Feinbloom, New York, N.Y., assignor to Designs for Vision, Inc., New York, N.Y.

Continuation of Ser. No. 851,935, Nov. 16, 1977, abandoned.
This application Sep. 25, 1978, Ser. No. 945,122
Int. Cl.³ G02B *21/12, 7/02*
U.S. Cl. 350—91 **7 Claims**

1. In a microscope including a microscope body disposed about a central axis defining an optical axis, an objective lens positioned within said body and aligned about said axis, and an eyepiece lens assembly disposed about said axis and adapted

for viewing an object positioned at an object plane located beneath said objective lens, the combination therewith of apparatus for increasing the light at said object plane, comprising:

(a) first means coupled to said body and positioned above said objective lens to direct input light rays relatively parallel to said axis towards said object plane, said means including a lens assembly adapted to converge said rays of light at a given location, and deflecting means including a first surface mirror positioned at said location and positioned at an angle of relatively forty-five degrees with respect to said axis and adapted to deflect said rays parallel to said axis and solely through said objective lens to said object plane, and



(b) rotatable means coupled to said objective lens for tilting said lens at a slight angle with respect to said axis to cause said lens to always be eccentrically aligned transverse to said axis, with the direction of said tilt being a function of the rotational position of said rotatable means, with said rotational position selected to prevent spurious light rays as reflected from said objective lens to appear at said eyepiece lens assembly when said lens is rotated with respect to said axis, without producing distortion at said eyepiece lens assembly.

4,251,129

PHOTOELECTRIC DETECTING DEVICE

Akiyoshi Suzki, Tokyo, and Ichiro Kano, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 5, 1978, Ser. No. 948,776

Claims priority, application Japan, Oct. 5, 1977, 52-119699; Oct. 6, 1977, 52-120419

Int. Cl.³ G02B *21/06*

U.S. Cl. 350—91 **2 Claims**

1. A device for scanning with a light beam two objects each having a flat reflection surface and an inclined reflection surface inclined relative to the flat reflection surface comprising:

image forming optical means for imaging one of said objects on another object positioned between said two objects,

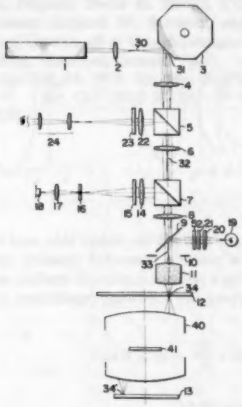
a scanning optical system for scanning a surface of said objects by a light spot, said scanning optical system including a light source of linear polarized light,

means for varying the polarized state of the light positioned between said two objects,

photodetector means for detecting light reflected from one of said objects,

filter means for intercepting light from the flat reflection surface, and for passing light from the inclined reflection surface to said photodetector,

separating means for separating light passed through said varying means from unpassed light whereby said photodetector can receive only light passed through said varying means and reflected from said inclined surface.



4,251,130

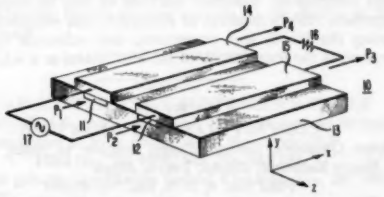
VELOCITY MATCHED OPTICAL GATE

Enrique A. J. Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 18, 1979, Ser. No. 58,744

Int. Cl.³ G02B *21/14*; G02F *1/01*

U.S. Cl. 350—96.14 **15 Claims**



1. In combination:

at least two coupled wave supporting means **(11, 12) (60, 61) (70, 71) (80, 81) (103, 104) (115, 116)**;

travelling wave means **(14, 15) (65, 66) (87, 88) (100) (120, 121)** for locally modulating the coupling between said wave supporting means in synchronism with the propagation of wave energy along said wave supporting means;

and a first source of bias signal **(17) (63) (72) (89)** connected to said travelling wave means;

CHARACTERIZED IN THAT

the magnitude of said bias signal is sufficiently large so as to permit coupling between said wave supporting means solely in the zero crossing regions of said signal.

4,251,131

MICROSCOPE OBJECTIVE

Tsutomu Tojo, Hachiouji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 15, 1978, Ser. No. 933,910

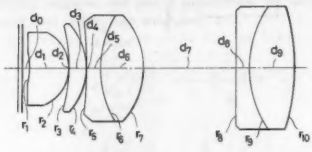
Claims priority, application Japan, Aug. 23, 1977, 52/100156

Int. Cl.³ G02B *9/34*

U.S. Cl. 350—414 **6 Claims**

1. A microscope objective comprising a first, second, third and fourth lens components, said first lens component being a

comparatively thick positive meniscus lens arranged concave toward the object side, said second lens component being a positive meniscus lens with comparatively small thickness



arranged concave toward the object side, said third lens component being a positive cemented doublet, said fourth lens component being a positive cemented doublet, said microscope objective satisfying the following conditions:

$$0.42f \leqq d_0 + \frac{d_1}{n_1} + d_2 \leqq 0.44f \quad (1)$$

(2) $0.58 \leqq r_2/r_1 \leqq 0.61$

(3) $50 \leqq |(\nu_4-\nu_3)+(\nu_6-\nu_5)| \leqq 85$

(4) $1.8 < n_1 < 1.82$

wherein reference symbols r_1 and r_2 respectively represent radii of curvature of surfaces on the object side and image side of the first lens component, reference symbol d_0 represents the distance from the object to the first lens component of the lens system, reference symbol d_1 represents the thickness of the first lens component, reference symbol d_2 represents the airspace between the first and second lens components, reference symbol n_1 represents the refractive index of the first lens component, reference symbols ν_3 and ν_4 respectively represent Abbe's numbers of respective lens elements constituting the third lens component, reference symbols ν_5 and ν_6 respectively represent Abbe's numbers of respective lens elements constituting the fourth lens component, and reference symbol f represents the focal length of the lens system as a whole.

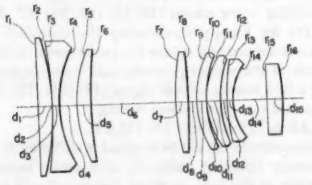
Focal Length: F = 41 ~ 58.2

Radius of Curvature	Lens Thickness	Refractive Index	Abbe Number
$r_1 = 1430.844$	$d_1 = 3.42$	$n_1 = 1.68250$	$\nu_1 = 44.7$
$r_2 = -78.000$	$d_2 = 0.18$		
$r_3 = -90.880$	$d_3 = 1.46$	$n_2 = 1.83481$	$\nu_2 = 42.7$
$r_4 = 27.915$	$d_4 = 4.91$		
$r_5 = 33.881$	$d_5 = 3.48$	$n_3 = 1.69895$	$\nu_3 = 30.1$
$r_6 = 107.950$	$d_6 = 21.78$	~1.33 (variable)	
$r_7 = 57.855$	$d_7 = 3.23$	$n_4 = 1.81600$	$\nu_4 = 46.6$
$r_8 = -212.500$	$d_8 = 2.11$		
$r_9 = 23.205$	$d_9 = 2.84$	$n_5 = 1.81554$	$\nu_5 = 44.4$
$r_{10} = 34.500$	$d_{10} = 0.10$		
$r_{11} = 19.350$	$d_{11} = 3.54$	$n_6 = 1.64000$	$\nu_6 = 60.1$
$r_{12} = 38.667$	$d_{12} = 1.38$		
$r_{13} = 60.350$	$d_{13} = 1.30$	$n_7 = 1.84666$	$\nu_7 = 23.9$
$r_{14} = 14.400$	$d_{14} = 8.84$		
$r_{15} = -13639.246$	$d_{15} = 3.96$	$n_8 = 1.88300$	$\nu_8 = 40.8$
$r_{16} = -56.177$			

4,251,132
COMPACT STANDARD ZOOM LENS

Sadao Okudaira, Banzan, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 45,353
Claims priority, application Japan, Jun. 30, 1978, 53-79378
Int. Cl.³ G02B 15/14
U.S. Cl. 350—423 2 Claims

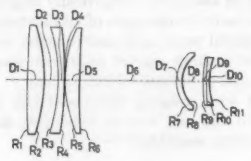


1. A compact standard zoom lens comprising in order from the object side; a front divergent lens group and a rear convergent lens group, both lens groups being mechanically movable to thereby vary the focal length, said front divergent lens group composed, in order from the object side, of a first lens being a positive lens, a second lens being a double concave lens and a third lens being a positive meniscus lens convex on the object side, and said convergent lens group composed of four positive lenses and one negative lens, said zoom lens satisfying the following conditions:

4,251,133
LARGE APERTURE TELEPHOTO-LENS

Sadahiko Tsuji, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 8, 1978, Ser. No. 958,634
Claims priority, application Japan, Nov. 16, 1977, 52-137674
Int. Cl.³ G02B 9/62, 9/60
U.S. Cl. 350—465 4 Claims



1. A large aperture telephoto-lens comprising, a front lens group having a positive power and remaining stationary during focusing, said front lens group consisting of a positive, a negative and a positive lenses in said order; a rear lens group having a negative power and including a stationary sub-group and a movable sub-group, said movable sub-group being axially movable to effect focusing of the telephoto-lens to suit differing object distance; and wherein

$$47 > \frac{\nu_1 + \nu_3}{2} - \nu_2 > 36$$

$$1.15|R_3| > |R_2| > 1.04|R_3|, R_2 < 0, R_3 < 0$$

$$0.41f > |R_3| > 0.34f$$

$$0.31 > n_2 - \frac{n_1 + n_3}{2} > 0.22$$

where

ν_1, ν_2, ν_3: Abbe's numbers of the lenses constituting the front lens group.

n_1, n_2, n_3: Refractive index of the lenses constituting the front lens group.

R_2: Radius of curvature of the image side surface of the object side positive lens in the front lens group.

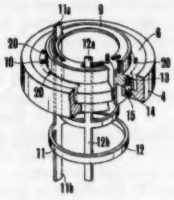
R_3: Radius of curvature of the object side surface of the negative lens in the front lens group.

f: Focal length of the whole system where an object at the infinite distance is in focus.

4,251,134
BAYONET SAFETY MECHANISM FOR CAMERA LENS MOUNT

Akira Sato, Ohme, and Takashi Isobe, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1979, Ser. No. 79,371
Int. Cl.³ G02B 7/02
U.S. Cl. 350—257 8 Claims



1. A lens assembly for a camera comprising:

(a) lens barrel means having operative components of said lens assembly mounted therewith and including an attachment face which interfaces with said camera during attachment thereto of said lens assembly;

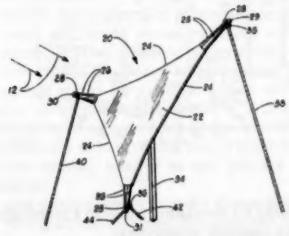
(b) bayonet coupling means adapted to be engaged and disengaged with complementary bayonet coupling means on said camera upon relative rotation therebetween for operatively mounting and dismounting said lens assembly on said camera; and

(c) means for impeding mounting of said lens assembly on said camera when said lens assembly is misaligned relative to said camera during a mounting operation, said impeding means comprising a plurality of projection members provided on said attachment face for abutting against said complementary bayonet coupling means to prevent misaligned mounting of said lens assembly.

4,251,135
SOLAR REFLECTOR

Douglas C. Stone, 849 Sunrise, Derby, Kans. 67037

Filed May 7, 1979, Ser. No. 36,309
Int. Cl.³ G02B 5/08
U.S. Cl. 350—288 7 Claims



1. A solar reflector for receiving and reflecting solar energy therefrom, the reflector comprising:

a flexible triangular reflective sheet;

tension means connected to the three corners of the reflective sheet for placing the sheet under tension and forming a smooth planar surface; and

support means attached to the tension means for supporting the tension means and reflective sheet thereon.

4,251,136
LCDS (LIQUID CRYSTAL DISPLAYS) CONTROLLED BY THIN FILM DIODE SWITCHES

Carla J. Miner, Nepean; David R. Baraff, Ottawa; Nur M. Serinken, Kanata; Richard W. Streater, and Vladimir F. Drobny, both of Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

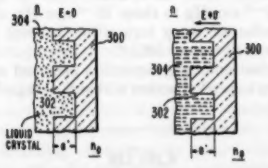
Filed Jul. 25, 1979, Ser. No. 60,274
Int. Cl.³ G02F 1/133
U.S. Cl. 350—334 12 Claims

1. A display cell comprising a pair of plates at least one of the plates being transparent, the plates flanking an electro-optic material, the optical transmissivity of the material being dependent on potential difference applied across the material the display cell having a plurality of picture elements, each picture element defined by a pair of opposed electrodes on the inside faces of the respective plates with means for applying a voltage between the opposed electrodes of each element, each element being series connected to, and controlled by a respective switch element, switch elements each comprising two parallel branch of series-connected thin film diodes, the diodes of one of the branches having reverse polarity to the diodes of the other branch.

4,251,137
TUNABLE DIFFRACTIVE SUBTRACTIVE FILTER

Karl Knop, Zurich, and James Kane, Zumikon, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Sep. 14, 1978, Ser. No. 942,184
Claims priority, application United Kingdom, Sep. 28, 1977, 40422/77
Int. Cl.³ G02F 1/133
U.S. Cl. 350—347 V 2 Claims



1. A tunable diffractive subtractive color filter comprising a solid diffractive phase medium including a fixed, predetermined waveform profile surface relief pattern, an adjustable index-of-refraction, optically-transparent, fluid medium in which said surface relief pattern is immersed, and control means for selectively controlling the index of refraction of said fluid medium;

wherein said selectively controllable index of refraction of said fluid medium is within a continuous range of indices of refraction that extend from a certain maximum index of refraction to a certain minimum index of refraction, and

said medium is a transmissive medium having a given index of refraction which is equal to or greater than said certain maximum or is equal to or less than said certain minimum,

wherein said predetermined waveform profile is a rectangular waveform profile having a given physical amplitude and a given aspect ratio, and

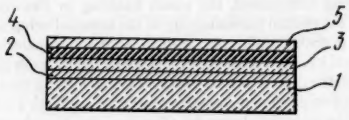
wherein said given physical amplitude is substantially equal to 260 nanometers divided by the difference between said certain maximum and said certain minimum indices of refraction.

4,251,138

METHOD OF PRODUCING SOLID ELECTROCHROME ELEMENT

Andrei R. Lusis, ulitsa Maskavas, 379, kv. 84; Yanis K. Klyavin, ulitsa Blaumana, 25, kv. 1, both of Riga; Talivaldis V. Zamozdik, ulitsa Rainisa, 126, Jurmala; Juris L. Lagzdons, ulitsa Lacha, 2, kv. 10; Oyars A. Rode, ulitsa Auseklya, 6a, kv. 4, both of Riga, and Yanis Y. Pinnis, ulitsa Maskavas, 421, kv. 28, Riga, all of U.S.S.R.

Continuation of Ser. No. 751,973, Dec. 17, 1976, abandoned.
This application Nov. 30, 1978, Ser. No. 964,909
Claims priority, application U.S.S.R., Dec. 22, 1975, 2197452
Int. Cl.[3] G02F *1/17*
U.S. Cl. 350—357 **2 Claims**



1. A method of manufacturing a solid electrochrome element having two electrodes, comprising the steps of applying a layer of electrochrome material to an electrically conductive substrate which serves as one of the electrodes of said electrochrome element by vaporizing said material at a temperature of from about 1,200° C. to about 2,500° C. in a vacuum from about 10^{-6} to about 5×10^{-2} mm Hg, the temperature of said substrate being kept within a range of from about room temperature to about 500° C.; coating said electrochrome layer with a layer of an insulating material by vaporizing said insulating material at a temperature of from about 1,300° C. to about 2,000° C. in a vacuum from about 10^{-7} to about 10^{-4} mm Hg, the temperature of said substrate being kept within a range from about room temperature to about 300° C.; and coating said layer of insulating material with a layer of electrically conductive material which serves as the second electrode by vaporizing said electrically conductive material at a temperature of from about 1,000° C. to about 1,800° C. in a vacuum from about 10^{-6} mm Hg to about 10^{-4} mm Hg, the temperature of said substrate being kept within a range from about room temperature to about 200° C.

2. A solid electrochrome element as prepared according to claim 1, having a speed of action within the range from 0.01 to 1.0 (1/v.sec).

4,251,139

EYE EXAMINING INSTRUMENT

Isao Matsumura, Yokosuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1978, Ser. No. 906,094
Claims priority, application Japan, May 20, 1977, 52-58239
Int. Cl.[3] A61B *3/10, 3/14;* G03B *29/00*
U.S. Cl. 351—7 **9 Claims**

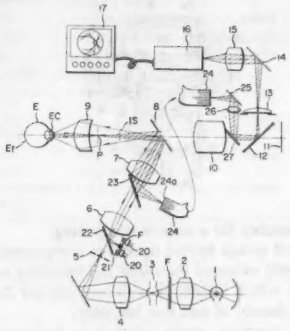
1. An eye examining instrument comprising:

an eye examining system including objective optical means adapted to oppose an eye to be examined;

an indication projection system for projecting at least one beam which does not form any image thereof on the surface of the eye and spaced from said objective optical means;

an observation system for visibly detecting an image of the indication and receiving the light energy coming from the fundus of the eye to be inspected;

an image transmitting system for transmitting the image of the indication and supplying the image of the indication to said observation system; and



optical converging means for converging the beam reflected upon the cornea of the eye on an input surface of said image transmitting system,

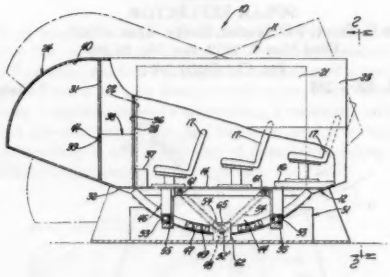
said optical converging means being disposed within said instrument such that the image projected by said indication projection system is sharply focused when the spacing between the instrument and the eye is correct, and blurred when said spacing is not correct.

4,251,140

RIDE ASSEMBLY FOR SIMULATING TRAVEL

Robert W. Fogerty, Jr., 2400 Somerset Blvd., Apt. 102, Troy, Mich. 48084

Filed Mar. 5, 1979, Ser. No. 17,503
Int. Cl.[3] G03B *29/00*
U.S. Cl. 352—132 **2 Claims**



1. A ride assembly for simulating travel in a preprogrammed environment, said assembly comprising:

(a) a housing including a moveable base adapted to carry passengers thereon;

(b) support means for supporting said housing;

(c) first and second antifriction means disposed between said base and said support means for allowing each portion of said base to pitch and roll with respect to said support means in a relatively resistance-free fashion, wherein said first antifriction means comprises roller bearings disposed between said support means and said first carriage means, and wherein said second antifriction means comprises

roller bearings disposed between said first and second means;

(d) actuating means operatively associated with said base for imparting motion to said base relative to said support means to cause each portion of said base to pitch and roll wherein said actuating means includes:

1. a moveable carriage means moveably supported on said support means by said first antifriction means for, in turn, supporting said base, said carriage means moving about a fixed pitch axis associated with said support means through a predetermined range of pitch positions under the control of control means, said pitch axis being substantially perpendicular to the longitudinal axis of carriage means throughout said predetermined range of pitch positions;
2. a second carriage means moveably supported on said first carriage means by said second antifriction means for, in turn, supporting said base, said second carriage means allowing each portion of said base to move with respect to said first carriage means and said support means, said second carriage means being fixedly connected to said base, said second carriage means moving about a variable roll axis associated with said first carriage member through a predetermined range of roll positions under the control of said control means said roll axis being substantially parallel to said longitudinal axis of said first carriage means throughout said predetermined range of roll positions;

(e) screen means disposed interior to said housing for exhibiting motion pictures to simulate a window through which a scene exterior to said housing is viewed by the carried passengers, wherein:

1. said screen means comprises a spherical screen carried by said base to move therewith; and
2. said screen means receives projected motion pictures and defines a portion of said housing disposed above said base;

(f) audio-visual presenting means supported by said housing for producing sound within said housing and showing a series of picture images on said screen means wherein a motion picture having moving objects is formed, said sound and said motion picture providing at least a portion of the environment, wherein:

1. said audio-visual presenting means includes a projector means spaced from said screen means for projecting the series of picture images on said screen means;
2. said projector means is supported by said housing, the housing disposed above said base being connected with said base to move therewith; and
3. said projector means comprises a sound motion picture film projector carried by said base to move therewith for projecting a plurality of pictures from the film frames of sound motion picture film in series, said audio-visual presenting means including sound reproducing means producing sound synchronously with the projection of motion pictures on said screen means; and

(g) control means for controlling said actuating means to move each portion of said base in synchronism with the movement of a predetermined one of said moving objects wherein the motion of said base is controlled to simulate a screen moving relative to and exterior to said housing wherein:

1. said control means includes measuring means for measuring a predetermined characteristic of said projection process to automatically control said actuating means;
2. said measuring means counts the number of frames projected during said projection process, said control means utilizing said number to access said memory means, said memory means being replaceable with a second memory means to control the motion of each portion of said base to simulate a second scene moving relative to an exterior to said housing; and
3. said control means includes a preprogrammed memory means for storing an addressable sequence of control instructions, said control means utilizing said measured characteristic to access the memory means to thereby obtain said control instructions for automatically controlling said actuating means.

4,251,141

SHUTTER-DIAPHRAGM SYSTEM WITH LIGHT-TOTALIZING CIRCUIT

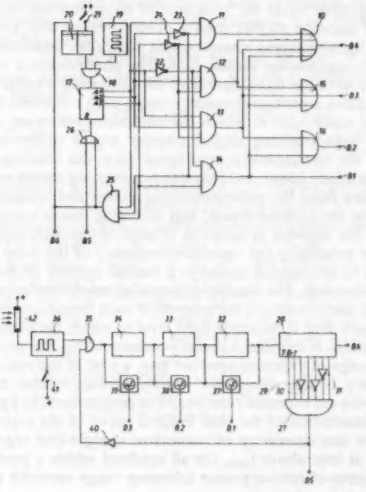
Otto Stemme, Munich, and Eduard Wagensonner, Aschheim, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 16, 1979, Ser. No. 29,912

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1978, 2816861

Int. Cl.³ G03B 7/097; G02F 1/13

U.S. Cl. 354—23 D **21 Claims**



1. In a photographic camera, in combination, means defining an exposure aperture which progressively increases in size dufing the performance of an exposure and responding to receipt of a terminate-exposure signal by closing off the aperture to terminate the exposure; light-dependent pulse-generating means including photosensitive means exposed to scene light and operative for generating a pulse train whose pulse repetition frequency varies as a function of scene light; frequency-modifying means operative as the exposure aperture progressively increases in size during an exposure for modifying the pulse train by effecting a corresponding and compensatory progressive increase of the light-dependent repetition frequency of the pulses counted by the counter means; and light-totalizing counter means receiving and counting the pulses of the modified pulse train during the course of an exposure and operative when a predetermined number of pulses has been counted for generating a terminate-exposure signal.

4,251,142

LIGHT TOTALIZING SYSTEM FOR PHOTOGRAPHIC CAMERA PROVIDED WITH A SHUTTER-DIAPHRAGM

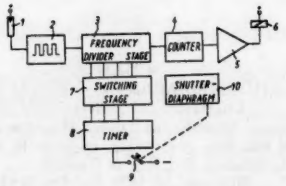
Peter Lermann, Narring; Eduard Wagensonner, Aschheim, and Wolfgang Ruf, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed May 9, 1979, Ser. No. 37,456

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820989

Int. Cl.³ G03B 7/097

U.S. Cl. 354—23 D **10 Claims**



1. In combination with a photographic-camera shutter-diaphragm system of the type operative for effecting a progressive change of exposure-aperture size during the ongoing course of an exposure and including means for terminating the exposure at least in dependence upon generation of a terminate-exposure signal but incapable of implementing an exposure of duration shorter than a predetermined time interval t_{min}, a light-totalizing system which comprises: light-dependent pulse-generating means, including photosensitive means exposed to scene light, operative for producing a pulse train whose pulse repetition frequency varies with variations in the level of scene light to which the photosensitive means is exposed; light-totalizing digital counter means operative for issuing the terminate-exposure signal upon the reaching of a predetermined count; and frequency-converting means receiving pulses from the pulse-generating means and transmitting pulses to the counter means, and including means operative, during the ongoing progressive change of exposure-aperture size, for modifying the repetition frequency of the pulse train applied to the counter means in a limited number of discrete successive steps, the number of stepwise repetition-frequency changes performed and the amount of each frequency change being such that, if the scene-light level to which the photosensitive means is exposed remains constant during the progressive change of exposure-aperture size, a plot of the repetition frequency of the pulse train applied to the counter means versus elapsed exposure time would be proportional to a piecewise linearization of the time integral curve of the exposure-aperture size consisting of successive straight-line segments which, at least above t_{min}, are all confined within a predetermined error-of-total-exposure tolerance range centered about the time integral curve.

4,251,143

PHOTOGRAPHIC CAMERA WITH MEANS INDICATING THE STATE OF FOCUS

Otto Stemme; Istvan Cocron, both of Munich, and Peter Lermann, Narring, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,875

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1977, 2750735

Int. Cl.³ G03B 3/00; G01J 1/44

U.S. Cl. 354—25 **11 Claims**

1. In a photographic camera having a viewfinder, an objective and a manually operated focus adjuster used by the photographer for adjusting the state of focus of the camera, a semiautomatic focussing system comprising, in combination,

optical means located in the path of the incoming image light beam entering through the objective and operative for dividing the incoming image light beam into first and second component beams and projecting the first and second component beams onto respective first and second focal planes;

first and second planar photodetector arrangements located in respective first and second photodetector planes, the focal planes and the photodetector planes being so located relative to one another that the following conditions are met:

a. when the objective is correctly focussed and then defocussed in a first direction the sharpness of the image cast on the first photodetector arrangement increases while the sharpness of the image cast on the second photodetector arrangement decreases,

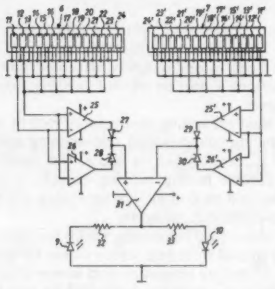
b. when the objective is correctly focussed and then defocussed in the opposite second direction the sharpness of the image cast on the first photodetector arrangement decreases while the sharpness of the image cast on the second photodetector arrangement increases,

each of the two photodetector arrangements comprising a respective array of photosensitive elements;

evaluating circuit means operative for generating signals indicating whether the objective is defocussed in the first direction or in the second direction, the evaluating circuit means comprising

a comparator having an output and first and second inputs,

a first circuit branch connecting the outputs of the photosensitive elements of the first detector arrangement to the first comparator input, and a second circuit branch connecting the outputs of the photosensitive elements of the second detector arrangement to the second comparator input,



each circuit branch comprising:

at least one subtractor means having an output and first and second inputs and operative for producing at its output a difference signal dependent upon the difference in value of the signals applied to its inputs but independent of the polarity of such difference, and

input signal-transmitting means connecting the first and second inputs of the at least one subtractor means to respective ones of the photosensitive elements of the respective photodetector arrangement for transmitting the output signals from the latter to the former,

the first and second circuit branches furthermore including respective first and second output signal-transmitting means connecting the outputs of the respective subtractor means to respective ones of the two comparator inputs,

each subtractor means comprising

first and second difference amplifiers each having an inverting and a non-inverting input and also an output,

the inverting input of the first difference amplifier being joined together with the non-inverting input of the second difference amplifier and constituting the first input of the subtractor means,

the non-inverting input of the first difference amplifier being joined together with the inverting input of the second

difference amplifier and constituting the second input of the subtractor means, and

first and second diodes each having a first terminal connected to the output of a respective one of the two difference amplifiers and having second terminals connected in common to form the output of the subtractor means; and indicating means connected to the output of comparator and operative in dependence upon the comparator output signal for providing a visible indication in the camera viewfinder of the direction in which the manual focus adjuster should be moved by the user to improve the state of focus.

4,251,144

RANGEFINDING SYSTEM

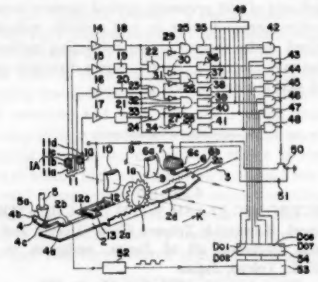
Motonobu Matsuda, Kawachinagano; Tohru Matsui, Osaka; Yasuhiro Nanba, Osaka, and Yoshihiro Tanaka, Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Mar. 6, 1979, Ser. No. 18,053

Claims priority, application Japan, Mar. 8, 1978, 53-27013; Mar. 28, 1978, 53-36299

Int. Cl.³ G03B *7/08;* G01J *1/20*

U.S. Cl. 354—25 **11 Claims**



1. A device for automatically adjusting the focus setting of an objective lens, said device comprising:

(a) a light beam emitter for emitting a light beam;

(b) an exit means for projecting said light beam emitted from said light beam emitter toward a target object located within a distance range consisting of a plurality of distance zones;

(c) an entrance means for receiving a light beam reflected from said target object, said entrance means disposed at a predetermined distance from said exit means such that said reflected light beam is adapted to pass through said entrance means at an angle with respect to the emitted light beam whose value is dependent upon the distance between said target object and said device, said reflecting light beam projecting an image light spot representative of said target object;

(d) a plurality of light receiving elements for generating an output in response to light impinging thereon, said plurality of elements disposed behind said entrance means for receiving said image light spot, said plurality of elements spaced a predetermined distance from each other and arranged in a row, wherein said image light spot impinges on at least one of said light receiving elements, the location of the impinging of said image light spot varying in accordance with the distance zone within which said target object is located, whereby said light receiving elements generate a combination of outputs;

(e) a logic circuit for receiving said combination of outputs from said plurality of light receiving elements and for generating a signal representative of said distance zone within which said target object is located, said signal generated by said logic circuit in accordance with said combination of outputs from said plurality of light receiving elements;

(f) means for shifting said objective lens along the optical axis thereof for focus adjustment;

(g) an arresting means for arresting said objective lens shifting means;

(h) trigger means for actuating said objective lens shifting means; and

(i) means for actuating said arresting means in response to said signal generated by said logic circuit when said objective lens is set to a position corresponding to said distance zone within which said target object exists, said actuating means including a detector for detecting the position of said objective lens and generating actuating signals when said objective lens is brought into focus at one of said distance zones by the actuation of said objective lens shifting means, and a control circuit for comparing said actuating signals with said signal generated by said logic circuit and for actuating said arresting means upon the generation of the one of said actuating signals representing that said objective lens has been brought into focus at said distance zone represented by said signal generated by said logic circuit, whereby said objective lens is focused at said distance zone wherein said target object is located.

4,251,145

FOCUSSING SYSTEM FOR CAMERAS

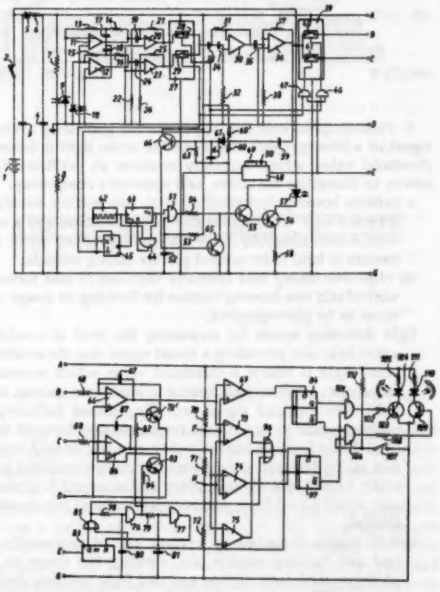
Istvan Cocron, and Theodor Huber, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 19, 1979, Ser. No. 59,207

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1978, 2832044

Int. Cl.³ G03B *3/00, 13/18;* G01J *1/42*

U.S. Cl. 354—25 **12 Claims**



1. In a focussing system of the type comprised of first and second photodetector means operative for generating respective first and second photodetector signals whose relationship depends upon state of focus, in combination, integrating means receiving the first and second photodetector signals and devel-

oping therefrom first and second integral signals, first signal storing means having a data signal input and a clock signal input, second signal storing means having a data signal input and a clock signal input, and threshold circuit means having outputs connected to the data signal and clock signal inputs of the first and second signal storing means and having inputs connected to receive the first and second integral signals, operative when either of the first and the second integral signal reaches a predetermined value for applying a data signal to the data signal input of the first or of the second signal storing means, respectively, and operative when either of the first and the second integral signal reaches a predetermined value beyond the first-mentioned predetermined value for applying a clock signal to the clock signal inputs of both the first and the second signal storing means.

4,251,146

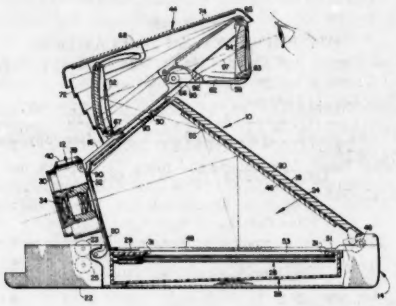
PHOTOGRAPHIC APPARATUS FOR PROVIDING A SIGNAL VISIBLE IN A CAMERA VIEWFINDER

William T. Plummer, Concord, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 29, 1979, Ser. No. 7,043

Int. Cl.³ G03B *7/08, 17/20, 19/12*

U.S. Cl. 354—53 **11 Claims**



1. Photographic indicator apparatus for providing a visual signal to a photographer that available scene light is below a threshold value which normally requires an artificial light source to illuminate the scene, said apparatus comprising:

a camera housing including at least one section having a forward wall which generally faces the scene and a rear wall which generally faces the photographer when the camera is held in its normal picture taking attitude;

an objective taking lens centrally disposed in said forward wall of said one housing section for forming an image of a scene to be photographed;

light detecting means for measuring the level of available scene light and providing a visual signal that the available scene light is below a threshold value which normally requires an artificial light source to illuminate a scene, said light detecting and signal providing means including a photodetector mounted with respect to said forward wall of said one housing section and to one side of said objective taking lens and a light emitting device mounted generally behind said photodetector and arranged to provide said visual signal from said rear wall of said one housing section;

optical means, including an eyelens spaced rearwardly of said one housing section, for viewing the scene to be photogr hed, said eyelens and said light emitting device being configured and arranged with respect to one another so that there is a point intermediate said eyelens and said light emitting device from which there is a direct line of sight to both said eyelens and said light emitting device but so that no direct line of sight between said eyelens and said light emitting device exists, said intermediate point being remotely spaced from both said eyelens and said light emitting device; and

a prismatic optical element mounted generally at said intermediate point, forward of said eyelens, and offset to one side of said eyelens optical axis which side is opposite to the side of said housing section adjacent which said light emitting device is positioned, said prismatic optical element being optically configured to receive light rays from said light emitting device and refract said received rays to provide a deviated optical path along which said visual light signal from said light emitting device can be observed by a photographer through said eyelens while viewing a scene to be photographed, said deviated optical path comprising one leg from said prismatic optical element to said light emitting device and another leg between said prismatic optical element and said eyelens, said prismatic optical element including a pair of spaced apart parallel non-refracting sides, a first planar refracting surface that is remote from said light emitting device and is arranged in a plane with respect to said one leg of said deviated optical path at an angle such that rays from said light emitting device which impinge on said first refracting surface are directed along a path that is substantially parallel to said spaced apart non-refracting sides so that the thickness of said prismatic optical element measured in a direction perpendicular to said eyelens optical axis is minimized, and a second planar refracting surface which deviates rays emerging therefrom in a direction generally toward said eyelens optical axis.

4,251,147

ELECTRONIC FLASH WITH CALCULATOR

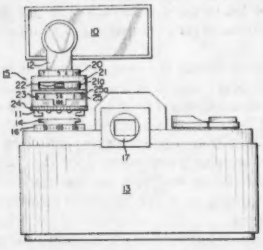
Shiro Sugimori, Kawasaki; Tetsuro Goto, Tokyo, and Sumiko Maruyama, Ichikawa, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Apr. 19, 1979, Ser. No. 31,591

Claims priority, application Japan, May 25, 1978, 53-69643[U]

Int. Cl.³ G03B *15/03, 17/00*

U.S. Cl. 354—127 **8 Claims**

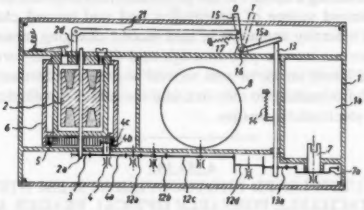


1. In a camera system having a camera body including a mounting section and an operating dial which can be rotated to a predtermined position corresponding to the sensitivity of film to be loaded in the camera body and fixed at the predetermined position; and an electronic flash device including a housing and a support member with a mounting section capable of being engaged with the mounting section of the camera body and a calculating for calculating a flash photography value dependent upon the film sensitivity; the improvement which comprises means dependent upon the engagement of said mounting sections for transferring to said calculator a film sensitivity signal from said camera body determined by said predetermined position of said operating dial.

4,251,148
PHOTOGRAPHIC CAMERA

Otto Stemme, Munich; Dieter Engelsmann, Unterhaching, and Reinhard Nicko, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 18, 1979, Ser. No. 104,901
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1978, 2855312
Int. Cl.³ G03B 1/12
U.S. Cl. 354—173 21 Claims

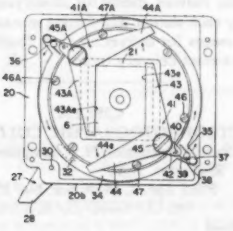


1. In a photographic camera, a combination comprising a housing having a film loading chamber, a film storage chamber and a film window; and means for transporting unexposed film from said loading chamber to said storage chamber, and for subsequently transporting it intermittently past said film window for exposure and back into said loading chamber, said means comprising a direction-reversible film-transport motor, an operating member for causing the motor to rotate in one direction in which film is transported from said loading chamber into said storage chamber, and a camera actuating member for causing the motor to rotate in an opposite direction in which the film is intermittently transported from said storage chamber past said film window into said loading chamber.

4,251,149
VIEWFINDER MASK ORIENTING DEVICE IN A CAMERA

Mitsuyuki Kimura, Kasukabe, Japan, assignor to Mamiya Koki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1979, Ser. No. 81,136
Int. Cl.³ G03B 13/10
U.S. Cl. 354—222 4 Claims



1. In a photographic camera having a viewfinder optical system with a square or substantially square focusing screen and a film holder mounted rotatably about the optical axis of the camera to change the orientation of an oblong optical image of a photographed object projected on its film, the combination therewith of a viewfinder mask orienting device comprising:

a base plate disposed in said viewfinder optical system and supporting said focusing screen in optical axial alignment with said optical system on that side of said base plate affording greater facility in interchanging of said focusing screen;

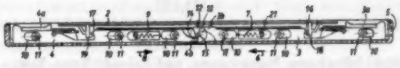
two Y-shaped levers each having two angularly disposed blade arms and one short arm, said levers being pivotally supported at their junctures of said three arms on said base plate near diagonally opposite corners of said focusing screen, each of said Y-shaped levers being pivotable between a first position at which one of the angularly disposed blade arms masks the edge part of its associated side of said focusing screen and a second position at which the other blade arm masks the edge part of its associated side of said focusing screen, one of the opposing blade arms of said Y-shaped levers masking one pair of opposed sides of said focusing screen at the same time in said first position, the other of said opposing blade arms of said Y-shaped levers masking the other pair of opposed sides of said focusing screen at the same time in said second position, said Y-shaped levers being disposed for cooperation to alternately mask edge parts of the two pairs of opposed sides of said focusing screen thereby to form an oblong viewfinder image of the object and change the orientation of the same image to conform to that of the image on the film; and

transmission means interposed between said film holder and said short arms of said Y-shaped levers so as to be actuated by the rotation of said film holder to thus operate said Y-shaped levers.

4,251,150
ARRANGEMENT FOR CLOSING AND OPENING A FILM SHEET CASSETTE, AND FILM SHEET CASSETTE PROVIDED WITH SUCH ARRANGEMENT

Walter Bauer, Munich; Heinz Kröbel, Taufkirchen, and Heinrich Färber, Munich, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Dec. 26, 1979, Ser. No. 106,896
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1978, 2856704
Int. Cl.³ G03B 17/26; G03C 5/16
U.S. Cl. 354—281 9 Claims



1. An arrangement for closing and opening a film sheet cassette, particularly an X-ray film cassette, having a bottom element and a top element provided with a projection and movable relative to the bottom element between closed and open positions, the arrangement comprising a sliding element having a further projection engageable with the projection of the top element in the closed position and disengageable from the same in the open position; a spring member urging said sliding element into and retaining the same in engagement with the projection of the top element in the closed position; and an elastic detent element returning said sliding element when the latter is disengaged from the projection of the top element in the open position, said elastic detent element being actuated by the top element when the latter moves from the open position into the closed position, so that said sliding element ceases to

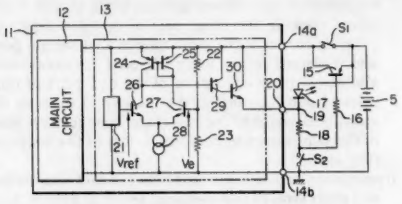
be retained by said elastic detent element and is urged by said spring into the engagement with the projection of the top element.

4,251,151

APPARATUS INCLUDING BATTERY CHECK CIRCUIT

Kenji Toyota, Kawasaki, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Aug. 30, 1978, Ser. No. 937,911
Claims priority, application Japan, Sep. 13, 1977, 52/122361[U]
Int. Cl.³ G03B 7/26; G01N 27/46
U.S. Cl. 354—60 L **8 Claims**



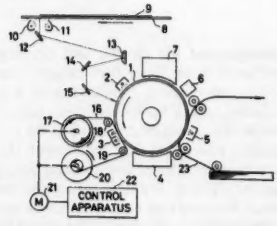
1. An apparatus for checking the voltage applied to an electrical circuit on a substrate, the substrate having a pair of terminals for connection to a voltage source for applying voltage to the electrical circuit, comprising power switch means between at least one terminal of the substrate and the voltage source for selectively applying a voltage between the pair of terminals, a battery check circuit on the substrate connected between the pair of terminals for detecting the level of the applied voltage and for providing on a third terminal of the substrate an output signal responsive to said detecting, display means external to the substrate, the display means connected to the third terminal and responsive to the output signal of the battery check circuit for indicating the detected voltage level, and battery check switch means for applying voltage from the voltage source to the display means to actuate the display means, the display means being disabled until actuated by the battery check switch means, and for applying voltage from the voltage source to the pair of terminals independently of the position of the power switch means.

4,251,152

ELECTROSTATIC APPARATUS FOR MULTI-IMAGE FORMATION

Seiichi Miyakawa, Nagareyama, and Takashi Yano, Tokyo, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Oct. 5, 1978, Ser. No. 948,742
Claims priority, application Japan, Oct. 7, 1977, 52-120633
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 R **6 Claims**



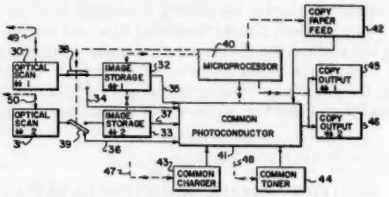
1. An electrostatic apparatus for copying synthesized recorded information from at least two information sources onto a copy sheet comprising a photoconductive member adapted to receive a latent electrostatic image, a first charging means for charging said photoconductive member, a light source, and optical means for transmitting a light image of a first source of information onto said photoconductive member to form a first latent electrostatic image corresponding to the transmitted light image of said first source on said photoconductive member, second charging means for directly charging said photoconductive member to form a second latent electrostatic image of a second source of information on said photoconductive member whereby said second latent electrostatic image is formed on said photoconductive member while retaining said first latent electrostatic image, said second source of information including a dielectric ion permeable film disposed between said second source of information and said second charging means whereby actuation of said second charging means permits corona ions to pass through said film so as to form said second latent image of said second source of information on said photoconductive member, and means for developing said latent electrostatic images.

4,251,153

MULTIPLEXED PHOTOCOPIER SYSTEM WITH DETACHABLE PORTABLE OPTICAL READER AND MEMORY

Alfred B. Levine, 2924 Terrace Dr., Chevy Chase, Md. 20015

Continuation-in-part of Ser. No. 718,260, Aug. 27, 1976, Pat. No. 4,182,568, and a continuation-in-part of Ser. No. 775,480, Mar. 8, 1977, abandoned. This application Jul. 17, 1978, Ser. No. 925,290
Int. Cl.³ G03G 15/00
U.S. Cl. 355—3 R **18 Claims**



11. An electrostatic copier system having plural optical reader stations and a developer mechanism for multiplexing application to the different reader stations according to the priority of usage of the stations, a plurality of "hard copy" delivery outlets, each associated with a different one of the optical reader stations, means for identifying the video images produced by each station, and sorting means responsive to said identifying means for delivering each "hard copy" reproduction to the correct delivery outlet.

4,251,154

ELECTROPHOTOGRAPHIC COLOR COPIER

Matthew J. Russel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

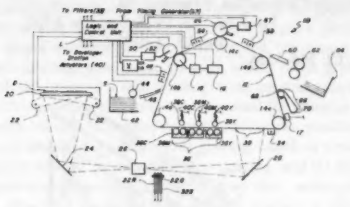
Filed Apr. 9, 1979, Ser. No. 27,976
Int. Cl.³ G03G 15/00, 15/01
U.S. Cl. 355—4 **7 Claims**

1. In electrophotographic apparatus for producing colored copies on a receiver sheet and including a movable image transfer member adapted to receive related transferable colored toner separation images on nonoverlapping image areas and means for moving said transfer member along a transport path, the improvement comprising:

transfer means mounted adjacent to said path for transferring at spaced locations along said path the plurality of color separation images to a receiver sheet; and

means operatively associated with said transfer means for successively positioning the receiver sheet at said spaced

locations of said transfer means in register with and in image transfer relation to said color separation images on



the moving transfer member to superimpose the color separation images in register on the receiver sheet.

4,251,155

CLEANING ARRANGEMENT IN AN ELECTROPHOTOGRAPHIC COPYING MACHINE

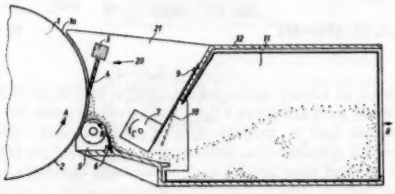
Günther Schnall, Eching; Ludwig Müllritter, Munich; Erich Schlick, Unterschleissheim; Hanns Blöchl, Unterhaching, and Peter Lischinski, Grünwald, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Apr. 23, 1979, Ser. No. 32,494

Claims priority, application Fed. Rep. of Germany, Apr. 22, 1978, 7812291[U]

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 **4 Claims**



1. In an electrostatic copying machine having an intermediate-image carrier, a cleaning arrangement comprising means for removing residual toner from the intermediate-image carrier; a housing including a compartment having an inlet spaced from said removing means and a wall portion projecting from a lower end of said inlet towards said removing means and carrier, so that residual toner removed from the carrier drops onto said wall portion and accumulates thereon; means for pushing accumulating toner through said inlet into said compartment; and a throw-away tray formed from an originally flat foldable sheet-material blank which is erectable to form the tray shape, said tray being removably received in said compartment and having an open side located at (said) inlet so that toner pushed through said inlet enters the tray via said open side thereof and can subsequently be discarded with the tray when the same is filled.

4,251,156

METHOD OF AND APPARATUS FOR MAKING PHOTOGRAPHIC PRINTS

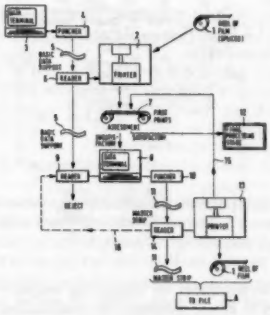
Franz Zimmermann, Meggen, and Karl Ursprung, Niederhasli, both of Switzerland, assignors to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Aug. 7, 1979, Ser. No. 64,574

Claims priority, application Switzerland, Aug. 17, 1978, 8765/78

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—41 **12 Claims**



1. A method of making photographic prints from a reel of film containing a plurality of individual frames comprising the steps of:

(a) passing said film through an automatic printer;

(b) counting the individual frames of said film during passage through said printer;

(c) forming from said film count an address for each frame;

(d) producing first prints of said frames as said film is passed through said printer and applying to each print the address associated therewith;

(e) assessing each of the first prints produced by said printer for acceptability;

(f) forming a program support containing the addresses of those frames producing unacceptable prints and information of the corrections required to make said unacceptable prints acceptable;

(g) passing said film a second time through said printer under control of said program support to produce repeat prints of the addressed frames with the required corrections and applying to the repeat prints their respective addresses;

(h) forming a specific order program support from the information contained in the program support and additional specific order information relating to frame addresses, number of reprints to be made and corrections to be made when reprints are to be produced; and

(i) passing said film through said printer under the control of said specific order program support to produce reprints according to the order.

11. Apparatus for making photographic prints from a reel of film containing a plurality of individual frames, comprising:

means including an input terminal for producing a program support containing information relating to a reel of film; and

an automatic printer for making photographic prints of the individual frames onto print material, said printer including means for counting the frames for printing on a reel of film and means controllable by said counting means and by a program support for applying address information to the print material.

4,251,157
APPARATUS FOR SELECTING ORIGINALS FOR COPYING

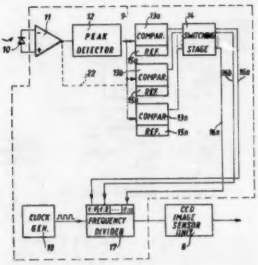
Bernhard Knör; Bernd Payrhammer, both of Munich, and Helmut Wahl, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

Filed Jul. 13, 1979, Ser. No. 57,380

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1978, 2831836

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—68 **11 Claims**



1. In an arrangement for inspecting originals to be copied with respect to image sharpness, in combination, CCD image-sensing means comprising a multitude of photosensitive zones arranged in a row, means for positioning an original to be copied, means for illuminating the original and imaging the illuminated original onto the row of photosensitive zones of the CCD image-sensing means, and means for applying to the CCD image-sensing means a variable-frequency clock signal, including frequency-varying means operative for automatically determining the value of an optical characteristic of the original and in dependence thereon varying the frequency of the variable-frequency clock signal.

4,251,158
ALBADA FINDER INCORPORATING A RANGE FINDER

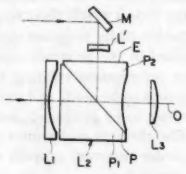
Tadashi Kimura, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 5, 1979, Ser. No. 17,719

Claims priority, application Japan, Mar. 16, 1978, 53/33879[U]

Int. Cl.³ G01C *3/04*

U.S. Cl. 356—8 **2 Claims**



1. An albada finder incorporating a range finder comprising a first negative lens component, a second thick negative lens component consisting of two elements which are split along a plane inclined with regard to the optical axis, a third positive lens component, a field mask formed on the surface of said third lens component, a reflecting mirror mounted on the surface of said second lens component and serving to reflect the rays coming from said field mask and a semitransparent surface formed on the inclined surface of said second lens component.

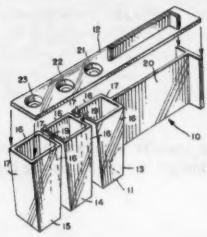
4,251,159
DISPOSABLE MULTI-CHAMBER CUVETTE

Fred K. White, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Jan. 15, 1979, Ser. No. 3,503

Int. Cl.³ G01N *1/10*

U.S. Cl. 356—246 **20 Claims**



1. A cuvette for use in photometric chemical analyzers, comprising a plurality of optically-clear open-topped cups each having side, bottom, and end walls; said cups being arranged in a longitudinal series with the end walls of adjacent cups being disposed in spaced-apart relation; said end walls of each pair of adjacent cups being joined by a thin vertical web formed integrally with said cups; each web being spaced inwardly from said side walls of said adjacent cups and extending at substantially right angles to said end walls of said adjacent cups.

4,251,160
METHOD AND ARRANGEMENT FOR ALIGNING A MASK PATTERN RELATIVE TO A SEMICONDUCTOR SUBSTRATE

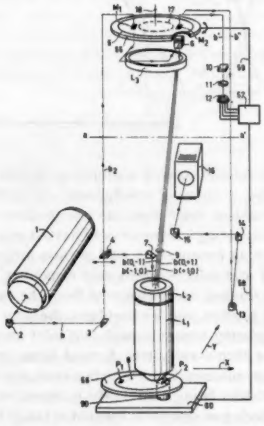
Gijsbertus Bouwhuis, and Theodorus F. Lamboo, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 742,210, Nov. 16, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,351

Claims priority, application Netherlands, Jun. 17, 1976, 7606548

Int. Cl.² G01B *11/26*

U.S. Cl. 356—401 **10 Claims**



1. A method of aligning with a substrate a mask pattern formed in a mask, wherein the mask pattern is repeatedly

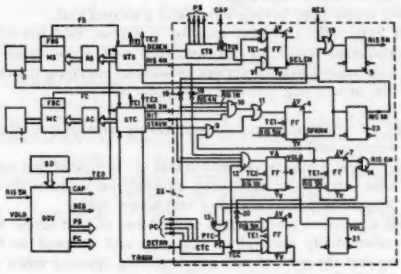
imaged directly on said substrate, comprising the steps of: (a) providing said mask comprising plural gratings which are located in said mask outside the area of said mask pattern, (b) providing said substrate comprising two phase gratings which are located outside the area on said substrate where a plurality of images of said mask pattern are to be formed, (c) using a first of said mask gratings as a reference with which other gratings are aligned, (d) imaging a said phase grating on said reference grating with a projection system which is used for imaging said mask pattern on said substrate, (e) modulating the position of an observed image of a certain said grating which is momentarily aligned relative to said reference grating, and (f) adjusting the position of said certain grating so that, averaged in time, the observed image of said certain grating is aligned relative to the reference grating.

4,251,161

CONTROL UNIT FOR A SERIAL PRINTER

Marcello Cresti, Strambino, and Franco Ugo, Bollengo, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Feb. 5, 1979, Ser. No. 9,502
Claims priority, application Italy, Feb. 8, 1978, 67246 A/78
Int. Cl.³ B41J *1/26*
U.S. Cl. 400—144.2 **9 Claims**



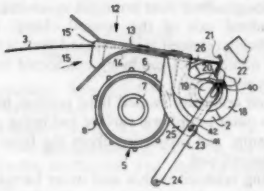
1. A serial printer comprising a carriage moved by a command unit along a printing line from a preceding print position to a new print position, a print hammer, a type member mounted on the carriage and rotatable intermittently, for positioning a selected character in front of said print hammer for the impact of the selected character on said print position, first sensing means responsive to the angular positions of said type-member for sensing whether a positioning operation of the selected character in front of said hammer has been effected, second sensing means for sensing positions of the carriage proximate to said new print position, and a control unit responsive to said first and second sensing means, for selectivley controlling said command unit and said hammer, wherein said control unit conditions said command unit to arrest said carriage in correspondence with said new print position in response to a not yet effected positioning of the selected character when said proximate position of the carriage is reached, wherein said control unit conditions said command unit to move said carriage through said new print position in response to an already effected positioning operation and wherein said control unit actuates said hammer when both the positioning of the selected character has been effected and said carriage has reached said new position.

4,251,162

FORM BAND ALIGNMENT DEVICE FOR A FORM PRINTER

Heinrich Kammerer, Königsfeld; Heinz Niess, St. Georgen; Walter Schunggart; Ruprecht Flugge, Villingen; Hermann Kilb, Brigachtal, Fed. Rep. of Germany

Filed Mar. 29, 1978, Ser. No. 891,349
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1977, 2717407; Mar. 1, 1978, 2808678
Int. Cl.³ B41J *15/00*
U.S. Cl. 400—613.1 **11 Claims**



1. In a form printer including a sprocket member for driving a perforated form band through the printer, the improvement comprising a device for aligning the perforated form band as the form band is introduced into the form printer, said device comprising an input passage means for introducing the form band into the printer pivotally mounted on the printer for movement between an input position for introducing the form band, and in the input position said input passage means being disposed out of engagement with said sprocket member, and a working position in which the perforated form band located within said input passage means is placed into engagement with said sprocket member, said input passage means having a first end through which the form band is introduced into the form printer and a second end spaced from the first end in the direction in which the form band moves from the first end into the printer, said sprocket member engaging the perforated band within said input passage means at a location intermediate the first and second ends thereof when said input passage means is in the working position, and further comprising aligning means for aligning the form band in a direction extending substantially normal to the direction in which the form band is introduced into said input passage means, said aligning means being positively connected to said input passage means for location in an effective position when said input passage means is in the input position and for loction in an ineffective position when said input passage means is in the working position.

4,251,163

KNOCK-OUT TYPE AUTOMATIC PENCIL

Wen-Kuei Chao, No. 47, Chung Cheng Rd., Ying Ko, Taipei Hsien, Taiwan

Division of Ser. No. 762,784, Jan. 25, 1977, Pat. No. 4,153,379.
This application Mar. 21, 1979, Ser. No. 22,629
Int. Cl.³ B43K *29/06*
U.S. Cl. 401—50 **4 Claims**

1. Knock-out type automatic pencil comprising:

an outer barrel having a tapered bore at its front end to retain a conical clamp;

a tube assembly coaxial with, and movably retained within, said outer barrel and including

a rear tube section projecting from the rear end of said outer barrel, which serves as a press means for depressing a spiral spring,

a pencil-lead-receiving tube connected to said rear tube section, which pencil-lead-receiving tube is adapted to receive a single piece of pencil lead,

a conical clamp for selectivity tightly clamping a single piece of pencil lead, said conical clamp having a plurality of longitudinal slots arranged symmetrically about a longitudinal axis of the conical clamp, said conical clamp being retained in the tapered bore at the front end of said outer barrel and being connected to said pencil-lead-receiving tube, and

an inverted conically shaped head portion having a continuous outer peripheral surface and being connected to said clamp, and projecting from the front end of said outer barrel; and

a spiral spring retained within said outer barrel by a spring retaining means located between the front end of said outer barrel and the front end of said rear tube section, said spring and said spring retaining means operating to support said pencil-lead-receiving tube and to urge said conical clamp into tight fitting engagement with the pencil lead projecting from said pencil-lead-receiving tube.

4,251,164

TIP FOR BALL POINT PEN

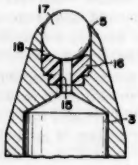
Eishiro Nakagawa, Ageo; Taketoshi Miyamoto, Tokyo; Naozi Umino, Koshigaya, and Hirosi Oyama, Soka, all of Japan, assignors to Pentel Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 776,372, Mar. 10, 1977, abandoned. This application Apr. 27, 1979, Ser. No. 34,006

Claims priority, application Japan, Mar. 19, 1976, 51-32283; Feb. 17, 1977, 52-16449

Int. Cl.³ B43K *7/10*

U.S. Cl. 401—216 **6 Claims**



1. A tip for a ball point pen comprising a cylindrical metallic tip body having a pointed end with a ball receiving recess therein opening out of the pointed end and being defined by a side wall and a bottom, the bottom of the ball receiving recess having a seat retaining recess therein which seat retaining recess has a cross-sectional area less than the cross-sectional area of said ball receiving recess, the seat retaining recess having a side wall parallel to the axis of said recesses and having a bottom wall which is substantially perpendicular to said axis, said seat recess having a non-circular peripheral shape and said tip body having at least one protrusion at the seat retaining recess nearest the pointed end and extending laterally into the seat retaining recess, a plastic ball supporting seat in the bottom of the ball receiving recess with a portion thereof deformed into said seat retaining recess and under said protrusion for preventing rotation of said seat around the axis of said tip body and movement axially of said tip body, said supporting seat having a bore therethrough for delivering ink through the ball supporting seat, and a ball rotatably mounted within said ball receiving recess and supported on said ball supporting seat.

4,251,165

ARRANGEMENT FOR RELEASABLE FASTENING OF A PEG IN A HOLE

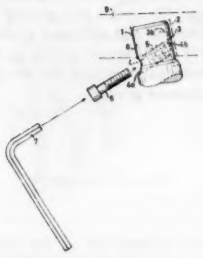
John E. S. Forsen, Älmhult, Sweden, assignor to Ikea Svenska AB, Sweden

Filed Apr. 2, 1979, Ser. No. 25,944

Claims priority, application Sweden, Apr. 13, 1978, 7804193

Int. Cl.³ B25G *3/00*

U.S. Cl. 403—263 **8 Claims**



1. A fastening device for releasably inserting and fastening an end peg of one furniture member into a peg receiving opening of another furniture member, as, for example, interconnecting and engaging a chair leg and a chair seat; said peg and said other furniture member being of material having the characteristics of wood with respect to deformability;

a screw bore extending through said peg at an oblique angle to the axis of said peg;

said screw bore having a first and a second end;

an externally threaded nut for a screw; said externally threaded nut being screwed into said screw bore; the externally threaded surface of said nut engaging the material of said peg defining said screw bore;

a screw;

said externally threaded nut also having internal threading to receive said screw;

said screw being insertable into said nut from said first end of said screw bore and being movable on rotation thereof toward said second end of said screw bore;

and a pressure plate at said second end of said screw bore substantially parallel to said peg and adapted to bear against the wall of said peg receiving opening when said peg is inserted into said peg receiving opening and to distribute the pressure from said screw when said screw is rotated against said pressure plate to fasten said peg in said peg receiving opening.

4,251,166

MITER JOINT BINDER FOR MOLDINGS

Karl Lautenschläger, Reinheim, and Gerhard W. Lautenschläger, Brensbach-Wersau, both of Fed. Rep. of Germany, assignors to Karl Lautenschläger KG, Mobelbeschlagfabrik, Reinheim, Fed. Rep. of Germany

Filed Jun. 22, 1979, Ser. No. 51,133

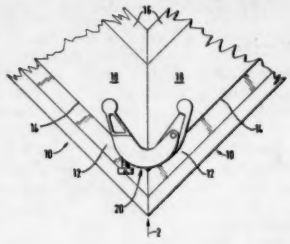
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1978, 2827611

Int. Cl.³ F16B *12/20*

U.S. Cl. 403—402 **7 Claims**

1. Clamping binder for two angularly meeting moldings, comprising: two levers joined pivotingly to one another at a pivot axis, each lever having a free end, two fastening pins respectively connected to the free ends, and projecting laterally from said ends and approximately parallel to the pivot axis and insertable respectively into the moldings to be joined, each lever having a section which is substantially straight in the area of the end bearing the respective fastening pin, and also has an adjoining curved or angled section, one lever being pivotingly joined at its curved or angled section to the other lever in an

area on the other lever situated between the ends of the other lever, and tightening means adjustably fastened to one of said two levers and bearing against the other lever, said tightening means forming thrust-tightening means arranged between said



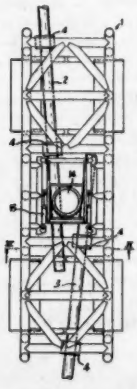
curved or angled section of said other lever and a supporting surface at said one lever and upon actuation adapted to press apart the end of said other lever and the supporting surface, whereby the levers can be pivoted towards one another in the sense of movement of the fastening pins.

4,251,167

METHOD OF WELDING TOGETHER SUBMERGED PIPE ENDS BY MEANS OF A TELESCOPIC CONNECTION SLEEVE

Philippe C. Nobileau, Neuilly sur Seine; Rene M. Dermy, Courcouronnes, and Guy J. Fleury, Paris, all of France, assignors to Compagnie Francaise des Petroles; Etudes Petrolieres Marines, both of Paris; Ateliers et Chantiers de Bretagne - A.C.B., Nates; Compagnie Maritime d'Expertises, Marseille; Compagnie Generale pour les Developpements Operationnels de Richesses Sous-Marines (Doris), Paris and Societe Nationale Elf Aquitaine (Production), Courbevoie, all of, France

Division of Ser. No. 700,680, Jun. 28, 1976, Pat. No. 4,133,180.
This application Oct. 16, 1978, Ser. No. 951,814
Claims priority, application France, Jul. 2, 1975, 75 20785
Int. Cl.[3] B63C *11/40;* F16L *1/00*
U.S. Cl. 405—170 **9 Claims**



1. A method of connecting, by welding, the ends of two submerged pipes, said method comprising:

surrounding said ends of said two pipes by a receptacle carrying internally a connection sleeve,

making said receptacle watertight by connecting said receptacle to a submarine intervention unit,

removing the water from said receptacle, and

welding said pipe ends penetrating said receptacle to respective ends of said connection sleeve,

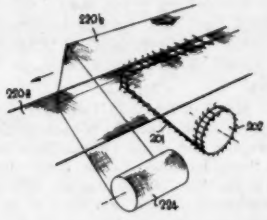
and wherein said method further comprises the creation of a space between the ends of said pipes to be connected, with said space being less than the distance separating two opposed coaxial orifices provided in the wall of said receptacle and introducing the ends of said pipes successively within said receiptacle through said orifices by displacement of said receptacle in opposite directions such that the ends of said pipes are successively placed in welding position with respect to said connection sleeve.

4,251,168

FASTENING MEANS FOR ROOF MATS FOR MINE WORKINGS

Karl M. Groetschel, Montsalvatstrasse 1a,, D–8000 Milnich Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,381, Jul. 29, 1977, Pat. No. 4,122,682. This application Sep. 11, 1978, Ser. No. 941,049
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1977, 2748032
Int. Cl.[3] E21D *11/00*
U.S. Cl. 405—288 **12 Claims**



1. A fastener strip for mechanically fastening adjacent portions of mat material for lining and supporting a roof surface of a mine working and comprising:

a. base means of elongate form and comprising a strip of mesh material having sufficient flexibility to admit of coiling,

b. pin-like mat penetrating means carried by the base means at intervals along its length and in combination with the base means defining a profile, as viewed endwise on to the fastener strip, admitting of coiling of the fastener strip with successive layers of the base means in close or contiguous relation, and wherein, the pin-like mat penetrating means comprises two rows of staple pins situated adjacent to respective lateral edges of the base means and spaced apart from each other therealong, and the staple pins are formed by limbs of the mesh which terminate in free ends presented at the lateral edges of the strip of mesh material, and are inclined with respect to the base means in a direction such that they all point towards the same end of the fastener strip.

4,251,169

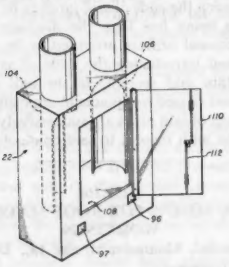
SINGLE LINE PNEUMATIC TUBE SYSTEM

Charles K. Kelley, and William W. Jones, both of Houston, Tex., assignors to Charles K. Kelley and Sons Inc., Houston, Tex.

Division of Ser. No. 876,112, Feb. 8, 1978, Pat. No. 4,189,261.
This application May 11, 1979, Ser. No. 38,168
Int. Cl.[3] B65G *51/26*
U.S. Cl. 406—110 **5 Claims**

1. An intermediate terminal for a single line pneumatic tube system comprising a housing having two ports, two sections of tubing each extending into one port, each section of tubing having an inward opening semicylindrical guide portion extending into the housing and terminating above the bottom of the terminal, the guide portions being similar and spaced and

facing each other so that air will flow around the carrier, each guide portion having a full tubing section extending into the



terminal to facilitate insertion of a carrier for transmission, the terminal receiving and transmitting carriers in either direction through either port.

4,251,170

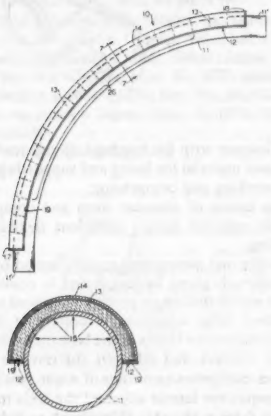
ABRASION RESISTANT BEND AND METHOD FOR SMALL PIPELINES

Joseph U. Sheridan, P.O. Box 835, Saugatuck, Mich. 49453

Filed Jul. 9, 1979, Ser. No. 55,704

Int. Cl.[3] **F16L** *55/00;* **B65Q** *53/52*

U.S. Cl. 406—197 **2 Claims**



1. A composite abrasion resistant pipe bend for use in pipe lines of relatively small diameter, comprising:

(a) an integral length of pipe having prior to use a major continuous central portion bent on a predetermined uniform radius and terminating in continuous linear end portions, said pipe being formed of substantially soft, ductile metal and having an inside diameter within the range of two to eight inches;

(b) an open frame member mounted on a continuous outer bend portion of said bend and forming a rim around an enclosed continuous area on said outer bend portion substantially in excess of the area defined by an anticipated opening ultimately formed in said continuous bend portion by abrasive attack;

(c) a plurality of half cylinder shaped ceramic wear liners seated within said rim in a snug-fitting keystone configuration completely filling said enclosed area and forming an impact wall proximate the outer surface of said outer bend portion, said liners having a curvature and slip-fit-like relation to the outer surface of said pipe in a cross-sectional plane, being devoid of curvature in the longitudinal direction and having a relatively short length such that the group of liners approximate with their composite long curvature the long curvature of the opposing outer pipe surface to provide minimal gap area therebetween and with the area of said impact wall being substantially in excess of said anticipated opening; and

(d) an appropriately curved cover plate positioned over said wear liners in substantially snug-fitting relation and secured to said rim to provide a leak proof and pressure tight housing enclosing said liners upon the formation of said opening during the course of abrasive wear of said bend.

2. The method of utilizing a bend in a pipeline of small inner diameter handling an abrasive material which in the course of use is anticipated to have an opening formed in the outer bend portion thereof due to abrasive attack, comprising:

(a) installing in a pipeline of compatible small inner diameter within the range of two to eight inches a bend which comprises prior to use:

(i) an integral length of pipe having prior to use a major continuous central portion bent on a predetermined uniform radius and terminating in continuous linear end portions, said pipe being formed of substantially soft, ductile metal and having an inside diameter within the range of two to eight inches;

(ii) an open frame member mounted on a continuous outer bend portion of said bend and forming a rim around an enclosed continuous area on said outer bend portion substantially in excess of the area defined by an anticipated opening ultimately formed in said continuous bend portion by abrasive attack;

(iii) a plurality of half cylinder shaped ceramic wear liners seated within said rim in a snug-fitting keystone configuration completely filling said enclosed area and forming an impact wall proximate the outer surface of said outer bend portion, said liners having a curvature and slip-fit-like relation to the outer surface of said pipe in a cross-sectional plane, being devoid of curvature in the longitudinal direction and having a relatively short length such that the group of liners approximate with their composite long curvature the long curvature of the opposing outer pipe surface to provide minimal gap area therebetween and with the area of said impact wall being substantially in excess of said anticipated opening; and

(iv) an appropriately curved cover plate positioned over said wear liners in substantially snug-fitting relation and secured to said rim to provide a leak proof and pressure tight housing enclosing said liners upon the formation of said opening during the course of abrasive wear of said bend;

(b) transferring abrasive material through said pipeline until the inner wall of said outer bend portion is worn and the continuous surface is interrupted and said opening is formed by said abrasive attack; and

(c) after said opening is formed utilizing the impact wall provided by said liners to receive said attack in said outer bend portion and said housing to provide a pressure tight and leak proof enclosure around said opening.

4,251,171

DRILLING ACCESSORY

Colin E. P. Brett, 11701 First St. East, Suite 8, Treasure Island, Fla. 33706

Filed Jul. 27, 1978, Ser. No. 928,555

Int. Cl.[2] **B23B** *47/00*

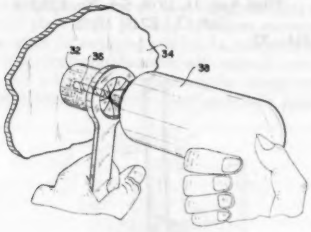
U.S. Cl. 408—67 **5 Claims**

1. A portable drilling accessory for use with a hand held drill when drilling a hole in a workpiece comprising:

a handle;

a hollow dust collector mounted to the handle and having an open forward end and an open rearward end aligned with the forward end, the forward end being positionable in abutting relation with the workpiece;

a cover having an opening therein through which a drill bit may be inserted to engage the workpiece, the cover being mounted to span the interior of the hollow dust collector in spaced apart relation with the forward end, said cover comprising multiple layers of flexible material and the opening comprising a centrally located star cut in each layer which is offset from the star cut in an adjacent layer;



whereby when the forward end is placed in abutting relation with the workpiece to be drilled and a drill bit inserted through the rearward end of the hollow dust collector, the opening in the cover and the forward end to engage the workpiece and drilling commenced, dust will be collected in the interior of the hollow dust collector between the cover and the workpiece.

4,251,172

CUTTING TOOL INSERT FOR PRECISION RADIAL MACHINING

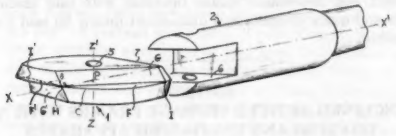
Alfred Durand, Poissy, France, assignor to Societe A.R.A.F., Poissy, France

Filed Aug. 13, 1979, Ser. No. 65,846

Claims priority, application France, Aug. 25, 1978, 78 24660; Nov. 11, 1978, 78 33702

Int. Cl.[3] **B23B** *27/08, 27/16;* **B26D** *1/14*

U.S. Cl. 408—228 **6 Claims**



1. A cutting tool insert for precision radial machining, comprising two cutting faces and adapted to be fitted in a rotary tool holder, wherein the insert consists of a disk having two identical opposed frustoconical portions having a common circular base forming the median plane of the disk of which the longitudinal median axis is aligned with the axis of rotation of the tool holder and intersects with the centre of the common base circle, each frustoconical portion having a cutting face in the median plane which is disposed symmetrically on either side of the longitudinal median axis, said cutting face being obtained by cutting the relevant frustoconical portions depthwise along said median plane and bound by an inclined plane, whereby the two cutting faces intersect with a common point located on said longitudinal median axis and form with said inclined planes chords of said base circle which extend from said common point and make each other an acute angle, the corresponding frustoconical surface making across said cutting face the rake angle with a plane tangent to the base circle and perpendicular to said median plane.

4,251,173

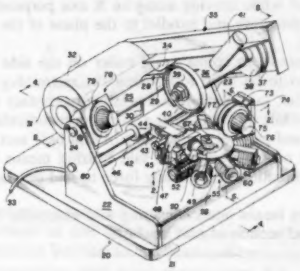
KEY CUTTER

Edward Saucedo, 711 N. Copia, El Paso, Tex. 79903

Filed Oct. 25, 1978, Ser. No. 954,459

Int. Cl.[2] **B23C** *1/16, 3/30*

U.S. Cl. 409—82 **4 Claims**



1. In a key cutter, a base, spaced apart side members on said base, a rod member extending between said side members, a sleeve rotatably mounted on said rod member, a bracket secured to said sleeve, electric motor means mounted adjacent said bracket and said motor means adapted to be eletrically connected to a source of electrical energy, a support member affixed to said bracket, said bracket including a cylindrical collar, a driven shaft mounted in said collar, belt and pulley means operatively connecting said motor means to said driven shaft, a handle connected to said collar, a rotary cutter mounted on said driven shaft, a rod element extending between said side members and secured thereto, a carriage operatively connected to said rod element and said carriage including a cylindrical member rotatably and slidably mounted on said rod element, an arm affixed to said cylindrical member, a clamp on the outer end of said arm defining a vise for a key blank, an index pin mounted adjacent said vise, a turret assembly including a rotary cylindrical unit mounted on said base, a plurality of radially disposed studs mounted in said cylindrical unit, a plurality of discs having notches therein, a plate member mounted on said cylindrical unit, and a plurality of radially disposed bars operatively connected to said plate member, and said bars having notches therein.

4,251,174

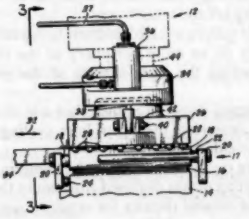
ROLLER HOLD DOWN

Walter I. Satler, Huntington Beach, Calif., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Feb. 28, 1979, Ser. No. 15,958

Int. Cl.[3] **B23C** *1/06, 1/13;* **B23Q** *3/06*

U.S. Cl. 409—137 **10 Claims**



1. A restraining mechanism, for use on a machine having a flat base section and a head section which move with respect to each other in a plane parallel to the plane of said flat base section, said mechanism being capable of transmitting a re-

straining force in a Z direction perpendicular to the plane of said flat base section, to hold a flat part location between said head section and said base section against said flat base section while said base section and said head section move with respect to each other comprising:

cylindrical roller means to contact said flat part located on said flat base section and maintain rolling contact with said part while moving along an X axis perpendicular to said Z direction and parallel to the plane of the flat base section;

bearing means, to contact said roller on the side opposite said part to be held, to transmit the restraining force to said roller, said bearing means being in contact with said rollers while moving along a Y-axis perpendicular to said X-axis and parallel to the plane of said base section;

extensible means attached to said bearing means to apply said Z directional restraining force to said bearing means; and

attachment means interconnecting said extensible means to said head section of said machine.

4,251,175

PIPE BURR CUTTING APPARATUS

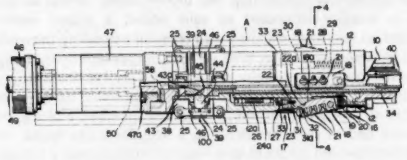
Keiichi Hara, and Tomoji Fujisawa, both of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1979, Ser. No. 39,295

Claims priority, application Japan, May 19, 1978, 53/59755; May 19, 1978, 53/59756; May 19, 1978, 53/67354[U]

Int. Cl.³ B23C *3/13*

U.S. Cl. 409—140 **16 Claims**



1. An inner burr and inner surface cleaning apparatus for pipes of medium and small diameters comprising:

a base;

a carriage mounted on the base and reciprocable along a long pressure-welded pipe of medium and small diameters having an inner burr produced on an inner surface thereof;

a supporting tube inserted into the pressure-welded pipe and having one end supported by the carriage and the other end opened;

first drive means mounted on the carriage;

a hollow cylindrical rotary shaft passing through the supporting tube with one end protruding from said other end of the supporting tube and rotated at the other end by the first drive means;

inner burr cutting means fixedly mounted on the rotary shaft for cutting off the inner burr;

sets of guide rollers, each of said sets being arranged circumferentially on an outer periphery of the supporting tube for contacting the inner surface of the pressure-welded pipe;

centering means disposed at the other end of the supporting tube for centering the inner burr cutting means in the pressure-welded pipe;

second drive means mounted on the centering means;

spatter crushing means disposed adjacent to the second drive means and rotated thereby for crushing spatters produced in the pressure-welded pipe;

electromagnet means disposed at either one of an end of the crushing means which is nearer to the carriage and an end of the crushing means which is more remote from the carriage, said electromagnet means being used for attracting chips and spatters in the pressure-welded pipe; and

spattering prevention means disposed between the inner burr cutting means and said one end of the supporting tube.

4,251,176

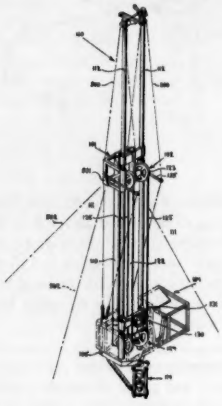
WELL TUBING HANDLING APPARATUS

Phillip S. Sizer, Dallas, and Malcolm N. Council, Richardson, both of Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Aug. 31, 1978, Ser. No. 938,518

Int. Cl.³ E21B *19/00*

U.S. Cl. 414—22 **37 Claims**



1. Well tubing handling apparatus comprising: a frame assembly including assembly guide and quick connect and disconnect means; means for mounting said frame assembly directly on a wellhead in a self-supporting relationship; and a separate removable hydraulic power assembly connectible on said frame assembly including tubing holding means and means for raising and lowering said tubing holding means relative to said wellhead for lifting tubing strings from a well bore and forcing tubing strings downwardly into a well bore, said hydraulic power assembly having assembly guide and quick connect and disconnect means operable with said assembly guide and quick connect and disconnect means on said frame assembly.

4,251,177

INCLINED ARTICLE STORAGE FRAMES WITH A LOADING AND UNLOADING APPARATUS

Horst Neuhaeusser, Danzigerstrasse 116, 7313 Reichenbach, Fed. Rep. of Germany, and Ole Storm, Oslo, Norway, assignors to Horst Neuhaeusser, Reichenbach, Fed. Rep. of Germany

Filed May 2, 1978, Ser. No. 902,086

Claims priority, application Fed. Rep. of Germany, May 2, 1977, 2719492

Int. Cl.³ B65G *65/00*

U.S. Cl. 414—276 **13 Claims**

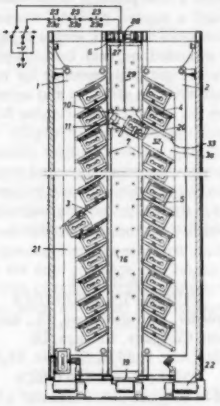
1. An article storage device adapted for storing and readying cassettes, film cards and other information carriers of essentially equal size, comprising:

a support frame including a plurality of compartments for accepting articles to be stored, said compartments being arranged in vertically oriented rows of generally aligned, opposing pairs of compartments, said rows being spaced apart from one another to define a passageway therebetween, each compartment having an inclined floor member, with the floor members of each compartment pair being inclined outwardly away from said passageway; and

movable means mounted on said support frame for selec-

tively inserting an article into one of said compartments, comprising a lifting assembly which is vertically displaceable in said passageway and an article carrier pivotally mounted on said lifting assembly in such a manner that the carrier is tiltable from a horizontal position bilaterally to an angle which is parallel to the inclined floor member of either compartment of a compartment pair;

wherein said movable means comprises a vertical support plate and a pair of parallel tracks mounted vertically on said support plate, wherein said lifting assembly comprises a carrier plate and a plurality of rollers mounted on said carrier plate for engaging said tracks, whereby said carrier plate is vertically displaceable with respect to said support plate, and wherein said article carrier comprises a carrier pocket defined by a bottom wall generally perpendicular



to said carrier plate and an outer confining member generally parallel to said carrier plate, a dual-armed lever and means for biasing said lever into a normally horizontal position, said carrier pocket and said lever being supported on a common axis attached to said carrier plate, said article storage device further comprising a selectively activatable stop member mounted on said support plate adjacent to and at the lever of each compartment, located such that each stop member in its activated position lies in the path of vertical movement of one of the arms of said lever, whereby movement of said lever into contact with one of said activated stop members causes tilting of said carrier pocket, and withdrawal of said lever from said stop member results in said carrier pocket reassuming its normal horizontal position due to the action of said biasing means.

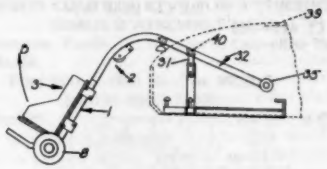
4,251,178

BUSINESS MACHINE CART WITH TRUNK LOADING ATTACHMENT

Elroy E. Bourgraf, Cincinnati; Robert E. Dunn, and Kenneth R. Self, both of Washington Ch., all of Ohio, assignors to Ferno-Washington, Inc., Wilmington, Ohio

Filed Sep. 14, 1978, Ser. No. 942,188
Int. Cl.³ B65G *67/00*
U.S. Cl. 414—343 **15 Claims**

1. A cart for transporting and demonstrating business machines and the like comprising an elongated track defining tubular frame having an essentially planar lower portion and a curved upper portion, wheel at the lowermost end of said lower portion, a carriage for a business machine mounted on said frame for movement from a lowermost transport position in which the carriage lies adjacent said wheels to an uppermost demonstration portion in which the carriage lies adjacent the uppermost end of said frame, means for positioning said frame in an inclined position in which the carriage will be horizontally disposed when in its uppermost demonstration position, and spring assist means mounted on the upper portion of said frame, said spring assist means comprises a spiral spring adapted to be unwound as the carriage is moved from the demonstration position of the transport position, and latch



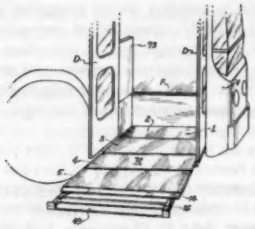
means for connecting the outermost end of said spiral spring to said carriage as said carriage is moved from its uppermost demonstration position to its lowermost transport position and for disconnecting said spiral spring when the carriage is returned to its uppermost demonstration position.

4,251,179

WHEELCHAIR LIFT

Graham R. Thorley, San Diego, Calif., assignor to Transportation Design & Technology, Inc., San Diego, Calif.

Continuation-in-part of Ser. No. 855,714, Mar. 13, 1978. This application May 24, 1979, Ser. No. 41,943
Int. Cl.³ B60P *1/46*
U.S. Cl. 414—545 **9 Claims**



1. A device acting alternately as a load-carrying lift or as a step structure between a lower level and an upper level which comprises:

a multi-sectional platform comprising at least first, second and third parallel sections laid side by side wherein the second section lies between the first and third section, said sections forming part of the load-carrying surface of the lift;

means for moving the platform between the lower level and the upper level;

means for pivotally articulating the first section in relation to the second section about a first axis located along their adjacent edges;

means for pivotally articulating the third section in relation to the second section about a second axis located along their adjacent edges;

means for placing the first and third sections to a substantially vertical position; and

means for maintaining the second section in a substantially horizontal position between and above said substantially vertical sections while rotating said first and third sections about said axes.

4,251,180
ROLL-CHANGING APPARATUS

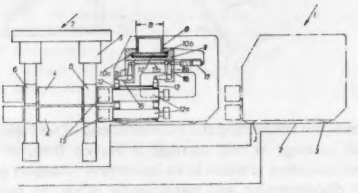
Manfred W. Hansen, Düsseldorf, Fed. Rep. of Germany, assignor to Sack GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Nov. 30, 1977, Ser. No. 855,885

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1976, 2654768

Int. Cl.³ B66F *9/04*

U.S. Cl. 414—560 **6 Claims**



1. Apparatus for exchanging the working rolls of a roll stand, comprising:

a gantry movable in the direction of the axis of the rolls to be exchanged, said gantry having an interior opening of at least three times the width of the rolls to be exchanged, and an upper cross-member;

a carriage mounted for movement along said cross-member in a direction transverse to the axis of said rolls to be exchanged;

means suspended vertically-adjustably beneath said carriage for extracting said rolls from said roll stand; and

means for suspending said roll-extracting means beneath said carriage such that said roll-extracting means is vertically-adjustable,

wherein said suspending means comprises a plurality of levers operatively connected at respective first pivot points to said carriage and at respective second pivot points to said roll-extracting means, and means for rotating said levers to effect vertical adjustment of said roll-extracting means relative to said carriage.

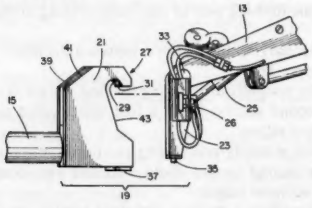
4,251,181
IMPLEMENT COUPLING APPARATUS FOR BOOM-TYPE VEHICLE

Edward R. Drott; John C. Christenson, both of Wausau, and Ralph E. Rathke, Merrill, all of Wis., assignors to Loed Corporation, Wausau, Wis.

Continuation of Ser. No. 879,900, Feb. 21, 1978, abandoned. This application Jun. 27, 1979, Ser. No. 52,600

Int. Cl.³ E02F *3/81*

U.S. Cl. 414—723 **4 Claims**



1. A coupler assembly for selectively attaching a selected one of various work elements to a boom at the outer end thereof, said boom being operatively mounted on a vehicle, said coupler assembly comprising, in combination:

a first coupler element secured to said end of said boom for pivotal movement about an axis transverse to said boom;

hydraulic drive means operatively connected to both said boom and said first coupler element for pivoting said first coupler element about said axis relative to said boom;

a second coupler element secured to said one work element;

said first and second coupler elements including cooperating rigid, immobile means for partially interconnecting said first and second coupler elements;

cooperating lock means on both said first and second coupler elements for interlocking said coupler elements together after said cooperating means on said coupler elements are in said partially interconnected condition;

said cooperating lock means including a rigid lock member movably carried on said first coupler element for movement between a first position where said lock means are unlocked and a second position where said rigid lock member interlocks said lock means together;

drive means mounted on said first coupler element connected to said rigid lock member for moving said rigid lock member between said first and second positions; and

control means on said vehicle, remote from said coupler elements, for operating said hydraulic drive means for pivotally moving said first coupler element and for moving said cooperating means into and out of said partially interconnected condition, said control means also operating said drive means for moving said rigid lock member between said first and second positions.

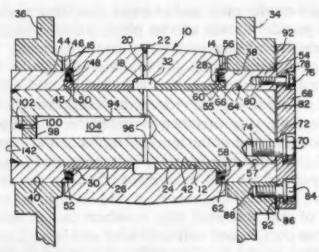
4,251,182
PIVOT PIN ASSEMBLY

William L. Schroeder, Buffalo Grove, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Aug. 6, 1979, Ser. No. 64,309

Int. Cl.³ F16C *11/02*

U.S. Cl. 414—723 **6 Claims**



1. A serviceable pivot pin assembly for pivotal mounting of a bucket on a boom arm, said bucket have a pair of brackets secured thereto and said boom arm having a transverse bore, said assembly comprising:

bearings retained in said transverse bore;

a pin having an enlarged head extending through said brackets and rotatably in said bearings;

a thrust ring on the end of said pin and an end plate;

releasable securing means connecting said pin, said thrust ring, said brackets and said end plate as a unit to rotate on said bearings.

4,251,183
CROSSOVER DUCT ASSEMBLY

Hsin-Tuan Liu, Scottsdale; George L. Perrone, and Leo E. Gambee, both of Phoenix, all of Ariz., assignors to The Garrett Corp., Los Angeles, Calif.

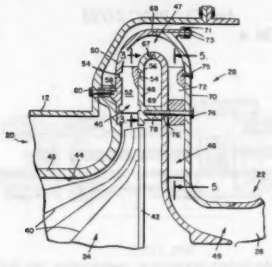
Filed Jan. 30, 1978, Ser. No. 873,639

Int. Cl.² F04D *17/12*

U.S. Cl. 415—198.1 **57 Claims**

1. A crossover duct assembly for turning radially outward

gas flow to a radially inward direction comprising a generally U-shaped duct inner wall; a generally U-shaped duct outer wall for cooperating with said inner wall to form a generally U-shaped gas flow path having a gas entrance portion, a turning bend, and an exit portion, said inner wall and said outer wall each including a first section along the entrance portion and a second section along the exit portion; first means for connecting said first and second inner wall sections together



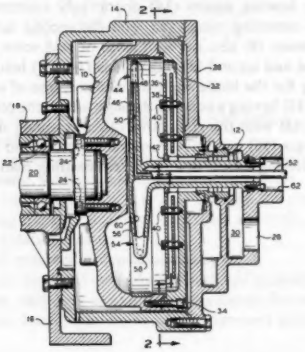
and with respect to said second outer wall section and for maintaining the spacing between said second inner and outer wall sections to form the duct exit portion; and second means for connecting said first and second outer wall sections and for maintaining the spacing between said first inner and outer wall sections to form the duct entrance portion, said second means including a plurality of relatively thin diffuser vanes extending between said first inner and outer wall sections.

4,251,184

CENTRIFUGAL PUMP

Vitolis Budrys, La Mirada, Calif., assignor to Kobe, Inc., Commerce, Calif.

Filed Mar. 23, 1979, Ser. No. 23,205
Int. Cl.³ F04D 1/12
U.S. Cl. 415—89 **8 Claims**



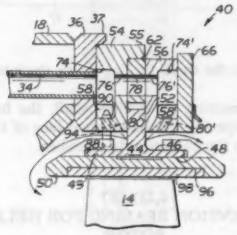
1. A centrifugal pump apparatus for pumping fluid comprising: a generally cylindrical housing rotatable about its central axis and defining a main pumping chamber; an unobstructed annular fluid inlet formed coaxial with said housing for directing fluid to be pumped into a periphery of the main pumping chamber of said housing; a stationary fluid pickup passage means extending radially outwardly of the central axis of said housing into the main pumping chamber thereof, said passage means including a fluid intake opening at the outermost end thereof, a fluid outlet in communication with the opposite end of said passage means, and wherein said unobstructed fluid inlet includes radially extending annular substantially flat surface elements having the radially inner portions adapted to communicate with a source of fluid and the radially outer portions communicating with the interior of the main pumping chamber of said housing.

4,251,185

EXPANSION CONTROL RING FOR A TURBINE SHROUD ASSEMBLY

Karl W. Karstensen, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 1, 1978, Ser. No. 902,016
Int. Cl.³ F01D 11/08
U.S. Cl. 415—136 **9 Claims**



1. A turbine shroud assembly comprising:

an expansion control ring defining an inner cylindrical surface;

manifold means for directing a cooling fluid toward preselected locations on said expansion control ring and means for coaxially supporting said expansion control ring relative to said manifold means under varying temperature conditions;

said expansion control ring defining a generally T-shaped cross-section, including a leg and a cross-bar portion, the upper surface of the cross-bar portion of the T forming the inner cylindrical surface, the leg extending radially outwardly from said cross-bar portion;

said manifold means comprising first and second manifold rings, said first and second manifold rings being positioned on opposite sides of the leg portion of the expansion control ring and each of said first and second manifold rings defining a plurality of fluid ports, said ports being oriented toward opposite sides of the leg portion of said expansion control ring.

4,251,186

DEVICE TO CIRCULATE A FLUID IN A HOLLOW SHAFT

Roger Chomel, Venissieux; Gerard Martin, Chassieu, and Georges Viallon, Saint Priest, all of France, assignors to Automobiles M. Berliet, Lyons, France

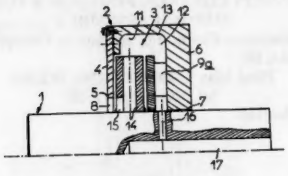
Filed Oct. 6, 1978, Ser. No. 949,215
Claims priority, application France, Oct. 7, 1977, 77 30785
Int. Cl.³ F04D 29/44; F16N 13/20; F16C 1/24
U.S. Cl. 415—210 **9 Claims**

1. A device to circulate a fluid inside a hollow shaft rotating about its axis, characterised in that it comprises:

a fixed stator comprising on the one hand a transverse face known as the opened face, of which the central hole has a diameter much larger than the external diameter of the hollow shaft at this point, so as to define a gap between the said transverse face and the shaft, and on the other hand a transverse face known as the closed face, of which the central hole is of a diameter slightly greater than the external diameter of the hollow shaft at this point;

an annular transverse separating wall adjacent to the shaft and which defines inside the fixed stator on one side an annular intake chamber located on the side of the opened

transverse face of the stator, and on the other side an annular compression chamber located on the side of the closed transverse face of the stator, these two chambers being in communication through a space defined between the periphery of the separating wall and the internal cylindrical surface of the stator;



a rotor fixed to the shaft, turning inside the intake chamber; and

a passage connecting the hollow shaft, the hollow of the shaft to an opening on the external face of the shaft, and opening into the compression chamber.

4,251,187

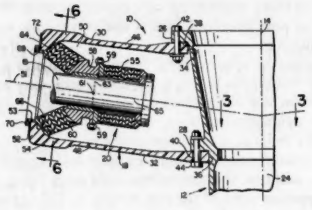
BLADE RETENTION BEARING FOR HELICOPTER ROTOR

Richard H. Hollrock, Simsbury, Conn., assignor to Kaman Aerospace Corporation, Bloomfield, Conn.

Filed May 25, 1978, Ser. No. 909,678

Int. Cl.[2] B64C *27/38*

U.S. Cl. 416—134 A **7 Claims**



1. An articulated rotor system for a helicopter and comprising a hub adapted for mounting to rotate about an axis, said hub having a bearing socket including an end wall at the radial outer end of said socket, said end wall having an aperture therethrough and a generally radially inwardly facing bearing surface surrounding said aperture, a rotor blade having a shaft concentric with the blade pitch change axis, said shaft extending through said aperture and into said socket, bearing means contained within said socket for connecting said blade to said hub and supporting said blade for articulated movement relative to said hub, said bearing surface being defined by a plurality of facets tangent to a spherical surface of revolution having its center at the intersection of said blade lead-lag axis and said blade flapping axis, said bearing means including a spherical, laminated elastomeric bearing having the spherically faced laminates thereof centered about the intersection of the blade lead-lag axis and the blade flapping axis, said laminates being annular in shape and receiving said shaft therethrough in spaced relation to said laminates, said spherical bearing having an outer end member attached to the outer lamination of said bearing and having a radially outwardly facing seating surface, said seating surface before assembly being defined by a plurality of additional facets complementing the facets defining said bearing surface, and means for releasably retaining said bearing means in assembly with said hub with said additional facets defining said seating surface in complimentary face-to-face engagement with said facets defining said bearing surface.

4,251,188

FOUR-BLADE ROTOR, ESPECIALLY FOR HELICOPTERS

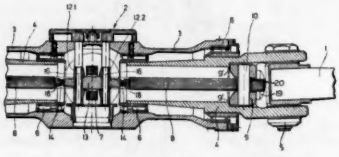
Alois Schwarz, Putzbrunn; Karlheinz Mautz, Ottobrunn, and Michael Stephan, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung, Munich, Fed. Rep. of Germany

Filed Nov. 20, 1978, Ser. No. 962,304

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756398

Int. Cl.[3] B64C *27/48*

U.S. Cl. 416—134 A **10 Claims**



1. A four-blade rotor structure, especially for helicopters, comprising a rotor head means (2) having a center, four rotor blades including respective blade root means arranged in pairs, whereby the blades of a pair are located diametrically opposite each other, blade angle bearing means (6) for operatively connecting the blade root means (4) to said rotor head means (2), first vertical (7) and second horizontal (8) tension resistant and torsionally yielding coupling means (7, 8) operatively interconnecting the blade roots of a respective pair of blades, a longitudinal aperture located centrally in each coupling means, first torsionally stiff centering means (12) for said vertical coupling means (7) located in the respective longitudinal aperture (11), second torsionally stiff centering means (13) for said horizontal coupling means (8) located in the respective longitudinal aperture (15), a first pair of pressure take-up bearing means (14') operatively interconnecting the respective centering means (12) and the first, vertical coupling means (7) on both sides of said rotor head center, a second pair of pressure take-up bearing means (14) operatively interconnecting the second centering means (13) and the second horizontal coupling means (8) also on both sides of said rotor head center, said first and second bearing means (14, 14') being torsionally yielding for the blade angle adjustment, one of said centering means (12) having a passage through which the other centering means (13) with the respective other coupling means extend, and means (16) operatively interconnecting said first and second centering means in a force transmitting manner.

4,251,189

FAN

Rudolf Zinsser, and Karl Prestl, both of Kelheim, Fed. Rep. of Germany, assignors to Heidolph & Zinsser GmbH, Kelheim, Fed. Rep. of Germany

Filed Sep. 26, 1978, Ser. No. 945,961

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821142

Int. Cl.[3] F04D *29/32*

U.S. Cl. 416—240 **9 Claims**

1. A fan blade having leading and trailing edges, a protective beading of soft elastic material spaced from said leading edge, and connecting elements flexibly connecting said protective

beading to said fan blade, said connecting elements being spaced from one another to thereby define open spaces be-

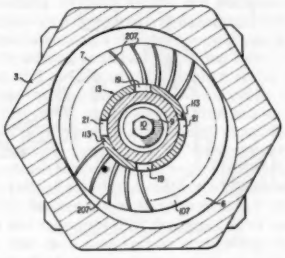
tween successive connecting elements and between said leading edge and said protective beading.

4,251,190

WATER RING ROTARY AIR COMPRESSOR

Charles D. Brown, Raymond; Cole N. Plummer, South Casco; Roger N. Tripp, Northwindham, and Maurice E. Fernald, Casco, all of Me., assignors to General Signal Corporation, New York, N.Y.

Filed Feb. 8, 1979, Ser. No. 10,476
Int. Cl.³ F04C *19/00*
U.S. Cl. 417—68 **2 Claims**



1. A rotary liquid ring air compressor comprising:
a compressor housing;
a rotor assembly non-rotatably mounted on a shaft within said housing, said rotor assembly having a bore;
means for introducing liquid in said housing for creating a liquid ring during rotation of said rotor assembly;
means for rotating said shaft;
a port head mounted on said housing; and
a port sleeve mounted on said port head and positionable in said bore, said port sleeve including means for reducing cavitation during start-up of said compressor under pressure.

4,251,191

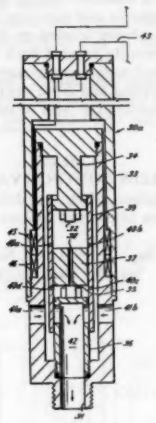
METHOD FOR LIFTING OIL IN A WELL

John C. Gass, Wichita, Kans.; Noell C. Kerr, Liberty, and Robert W. Pittman, Sugarland, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 889,792, Mar. 23, 1978, abandoned. This application Jun. 11, 1979, Ser. No. 47,421
Int. Cl.³ F04F *1/20*
U.S. Cl. 417—111 **7 Claims**

1. A continuous flow gas-lift method of producing a well having insufficient reservoir pressure to cause produced fluid to reach the surface unaided comprising the steps of,

(a) injecting a fluid of less specific gravity into the well with a fluid flow control valve, and
(b) passing the fluid simultaneously through and around the fluid flow control valve for making it frictionless by bal-



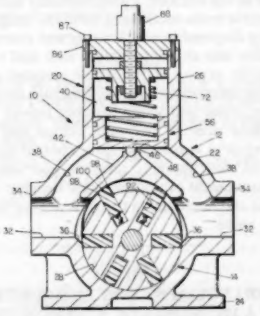
ancing the fluid pressure on all sides of the fluid flow control valve requiring a minimum of energy for operation of the frictionless balanced valve for providing more efficient continuous well fluid production.

4,251,192

ROTARY PUMP WITH SYMMETRICAL BY-PASS AND ROTOR WITH RESILIENTLY MOUNTED VANES

Alonzo R. Clark, R.R. 2, Stryker, Ohio 43557

Filed Dec. 7, 1978, Ser. No. 967,279
Int. Cl.³ F04B *49/08*
U.S. Cl. 417—291 **11 Claims**



1. A rotary pump comprising a housing having a substantially symmetrical shape about a center line thereof and forming an elliptical pumping chamber having its center on the center line, a first liquid passage formed in said housing, said first passage communicating with said chamber and extending to an outside surface of said housing, a second liquid passage formed in said housing, said second passage communicating with said chamber and extending to an outside surface of said housing, bypass passage means formed in said housing, said passage means communicating with said first and second passages and extending around said chamber, a bypass valve assembly including a valve and a valve seat communicating with said bypass passage means, said housing forming a valve chamber symmetrical with the housing center line and commu-

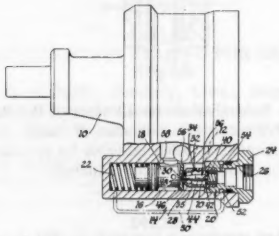
nicating with said bypass passage means, said valve seat being formed by a valve seat rod carried by said housing on the center line of said housing, said valve being of cylindrical shape and moveable in said valve chamber on the side of said valve seat rod opposite said pumping chamber, and spring means in said valve chamber urging said valve toward said valve seat rod, a rotor in said pumping chamber, a drive shaft affixed to said rotor, being located on the housing center line, and extending outwardly beyond both ends of said pumping chamber, bearing and sealing means supported by said housing and rotatably supporting said drive shaft, and vanes carried by said rotor and contacting the wall of said pumping chamber.

4,251,193

FLOW CONTROL VALVE

Gary R. Minnis, Saginaw, Mich., and John L. Stiles, St. Albans, England, assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 27, 1979, Ser. No. 79,970
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—300 **3 Claims**



1. A flow control structure for a hydraulic pump having a valve member responsive to the pressure differential across the flow control structure to direct a portion of the hydraulic fluid displaced by the pump to the reservoir, said flow control structure comprising; a housing; a flow passage through said housing have an inlet orifice; a longitudinally movable member having a variable cross-sectional area in the longitudinal direction and being disposed in said housing and extending through said inlet orifice into abutting relation with said valve member; spring means for urging said movable member into abutment with said valve member and for moving said movable member longitudinally when said valve member moves to effectively change the flow area of said inlet orifice and the resulting pressure differential across said flow control structure; and a stop means on said movable member and said housing for limiting the movement of said movable member to a predetermined amount and maintaining the flow area of the inlet orifice at a constant value.

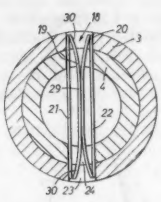
4,251,194

SPRING ARRANGEMENT FOR THE CONTROL VALVE OF A HYDROSTATIC STEERING UNIT

Hans C. Petersen, Nordborg, Denmark, assignor to Danvoss A/S, Nordborg, Denmark

Filed Apr. 2, 1979, Ser. No. 25,831
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1978, 2814230
Int. Cl.³ F03C *2/00*; F16F *1/18*; B62D *5/08*
U.S. Cl. 418—61 B **4 Claims**

1. A control valve assembly for a hydrostatic steering unit, comprising, a measuring motor, inner and outer concentric and relatively rotatable tubular valve members, one of said valve members being connected to said motor, means enabling the other of said valve members to be manually rotated for steering purposes, said valve members having axially aligned and diametrically arranged slots, a pair of planar supporting plates disposed in said slots, a pair of leaf springs disposed in said slots between and in discrete relation to said plates, said leaf springs being curved over substantially their entire lengths including



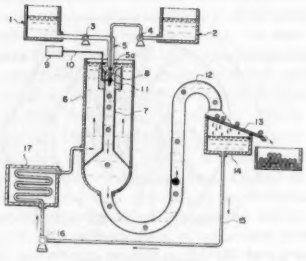
the ends thereof and being arranged in convexedly abutting engagement in said slots between said plates.

4,251,195

APPARATUS FOR MAKING MINIATURE CAPSULES

Toshiyuki Suzuki, Amagasaki; Kuniaki Matsumura, Ya'o; Hiroshi Maeda, Sakai; Akira Imai, Higashiosaka, and Nobuo Kurokawa, Nara, all of Japan, assignors to Morishita Jinta Company, Limited, Japan

Continuation of Ser. No. 749,755, Dec. 13, 1976, abandoned.
This application Nov. 20, 1978, Ser. No. 962,043
Claims priority, application Japan, Dec. 26, 1975, 50/157935; Jun. 4, 1976, 51/65308; Jun. 4, 1976, 51/65309
Int. Cl.³ B29F *3/10*; B29C *23/00*
U.S. Cl. 425—6 **4 Claims**



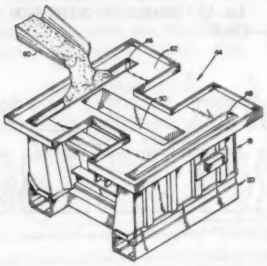
1. Apparatus for making miniature capsules comprising, means defining a capsule-forming orifice comprising, two coaxial conduits terminating as two concentric open ends defining a central opening and an annulus circumferentially of the central opening, means for delivering filler-contents of a capsule to the inner conduit of said two coaxial conduits extruded therefrom through said central opening as a stream, means delivering a settable coating liquid material to an outer one of said conduits for forming a capsule and extruded from said annulus as a stream defining an extruded film sleeve circumferentially of said stream for coating droplets of said filler-contents, means for delivering a cooling stream of cooling liquid along a path of travel parallel to and circumferentially of said stream of filler-contents and said film sleeve of settable coating material, means defining in said path, a fixed nozzle in said path adjacent said central opening and annulus and through which said cooling stream is developed as a flow circumferential of said filler-contents stream and film sleeve and through which all of said filler-contents stream and film sleeve pass, said nozzle having a converging inlet section and a constant inner diameter downstream of said inlet section, a driven annular vibrator internally of said nozzle and through which said filler-contents stream and film sleeve pass and are subjected to vibrations developed in said cooling stream parallel to said path of travel to develop discrete droplets of said filler-contents enclosed within said settable coating material,

and means to recover the droplets as capsules along said path of travel.

4,251,196
APPARATUS FOR PRECASTING CONCRETE PRODUCTS

Roger L. Toffolon, Hartford, and Warren E. Kart, Bristol, both of Conn., assignors to Atlantic Pipe Corporation, Plainville, Conn., by said Warren E. Kart

Division of Ser. No. 882,929, Mar. 1, 1978, Pat. No. 4,196,161.
This application Apr. 18, 1979, Ser. No. 31,058
Int. Cl.[3] B28B *1/08, 3/08, 7/10*
U.S. Cl. 425—173 **19 Claims**



1. Apparatus for use in precasting concrete products using a dry mix process wherein green product is capable of standing free and sustaining its own weight and structural integrity almost immediately on completion of formation of the product; said apparatus comprising a downardly open upper form section having the desired configuration of the sides of the product to be cast and at least one fill opening at the top, and a plurality of base form sections each with a configuration corresponding to that of the upper form section and each adapted for detachable assembly with and beneath upper form section to close the bottom thereof and to cooperatively define a downwardly closed casting cavity therewithin, each base form section being further adapted to support a free standing green cast product on disassembly of the form section from the upper form section and on removal of the upper form section from the product, and each base section comprising at least two separable parts which cooperatively and in assembled relationship support the green cast product substantially throughout its lower surface, and one of said parts supporting a cast product throughout only a portion of its lower surface when said parts are separated and in a disassembled relationship, said one part being adapted for transport of the cast product after curing and when it has attained substantially its full strength, and said one part of each base section being supported vertically by the other part thereof and free to move upwardly relative thereto, and access opening being provided beneath each of said parts for selective lifting thereof, said other part serving to raise said one part simultaneously when it is lifted itself.

4,251,197
STRETCHING APPARATUS OF A FLATTENED CYLINDRICAL FILM

Michio Sudo, c/o Nikko Resin Co., Ltd., Fujikoshi Bldg., No. 23-7, Higashi Gotanda 5-chome, Shinagawa-ku, Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 75,039
Int. Cl.[3] B29D *7/24*
U.S. Cl. 425—393 **2 Claims**

1. A stretching apparatus for stretching flattened cylindrical film having at least one cylindrical layer of thermoplastic resin comprising:

at least first and second opposed nip rolls in opposed contact with the outside of said flattened cylindrical film;

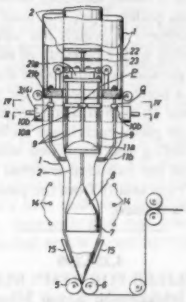
at least first and second supporting rollers inside said flattened cylindrical film bearing on, and being supported by, said first and second nip rolls through said at least one cylindrical layer;

a heavy stretching means inside said cylindrical film;

means for suspending said stretching means below said at least first and second nip rolls from said at least first and second supporting rollers;

at least first and second stabilizing rollers bearing against opposed inside surfaces of said at least one cylindrical layer;

means attached to said at least first and second supporting rollers for supporting said at least first and second stabilizing rollers above said at least first and second nip rolls;



at least a third stabilizing roller outside said at least one cylindrical layer aligned with, and bearing against, said first stabilizing roller through said at least one cylindrical layer;

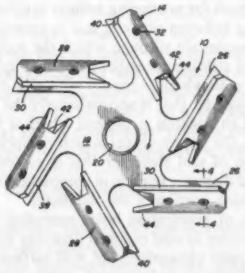
at least a fourth stabilizing roller outside said at least one cylindrical layer aligned with, and bearing against, said second stabilizing roller through said at least one cylindrical layer; and

said first, second, third and fourth stabilizing rollers being effective to stabilize said heavy stretching means against vibration due to side-to-side shaking of said at least first and second supporting rollers.

4,251,198
CUTTER HUB WITH REPLACEABLE KNIFE BLADES FOR UNDERWATER PELLETIZER

Hovey S. Altenburg, Tamaqua, Pa., assignor to Gala Industries, Inc., Eagle Rock, Va.

Filed Apr. 27, 1979, Ser. No. 34,140
Int. Cl.[3] B29C *17/14*
U.S. Cl. 425—67 **9 Claims**



1. A cutter hub for a pelletizer comprising a hub body adapted to be mounted on a drive shaft, a plurality of radially outwardly extending, circumferentially spaced supporting

arms rigid with the hub body and a blade mounted on each of said arms and extending axially toward a die plate for cutting pellets extruded through the die plate, each blade including a beveled side edge defining a cutting edge for association with the die plate, each of said arms being elongated and engaging and supporting a blade over substantially the entire radial extent of the blade thereby rigidly supporting the blade and resisting axial deflection of the outer end portion of the blade away from the die plate.

8. In combination with an underwater pelletizer having a die plate with passageways arranged in generally circular configuration through which pellet forming material is extruded in an axial direction, a drive shaft generally aligned with the center of the die plate and a cutter assembly mounted on and driven by said shaft to cut pellets from one axial surface of the die plate, that improvement in which the cutter assembly comprises a hub provided with a plurality of outwardly extending arms in generally parallel relation to the die plate and extending outwardly to a point adjacent the die plate passageways, and a blade mounted on each arm and projecting axially therefrom toward the die plate, each blade including an elongated cutting edge paralleling and associated with the axial face of the die plate to cut the extruded material into pellets as the extruded material exits axially from the passageways in the die plate and the hub is rotated.

4,251,199

STABILIZER FOR RESIN BUBBLES

Fumio Imaizumi, Ichikawashi; Kazuo Minato, and Toshitaka Kanai, both of Chibaken, all of Japan, assignors to Idemitsu Petrochemical Co. Ltd., Tokyo, Japan

Filed Jun. 6, 1979, Ser. No. 45,914

Claims priority, application Japan, Oct. 31, 1978, 53/133275

Int. Cl.³ B29D *7/22*

U.S. Cl. 425—72 R **5 Claims**

1. In an apparatus for producing tubular synthetic resin film by an air-cooling inflation process, said apparatus including a die having an annular slit through which the resin is extruded and an elongated stabilizer member extending upwardly from said die along a path which is coaxial with said die, said stabilizer having a diameter that is approximately the same as said annular die, and an opening in the end which is farthest from said annular die, the improvement which comprises:

(a) the portion of said stabilizer that is closest to said die having a reduced diameter portion in comparison to the diameter of the remaining portion of the stabilizer,

(b) a plurality of penetration holes extending through the wall of said stabilizer in said reduced diameter portion,

(c) the entire outer circumferential wall surface of the stabilizer that extends above said reduced diameter portion being provided with

(1) an engraved pattern of spaced apart deep grooves having a depth of 0.5 mm or more, said pattern forming a plurality of deep channels that extend from said reduced diameter portion to said opening in the end of the stabilizer that is farthest from said annular die, and

(2) an engraved pattern of shallow grooves having a depth of from 0.1 to 0.5 mm, said shallow grooves interconnecting said spaced apart pattern of deep grooves.

4,251,200

APPARATUS FOR SPINNING BICOMPONENT FILAMENTS

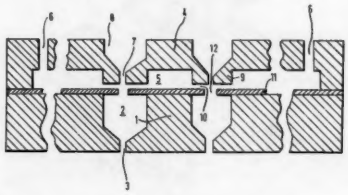
Paul C. Parkin, Harrogate, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Nov. 23, 1979, Ser. No. 97,067

Claims priority, application United Kingdom, Nov. 30, 1978, 46637/78

Int. Cl.³ D01D *3/00*; A21C *3/00*

U.S. Cl. 425—131.5 **2 Claims**



1. A spinning assembly for the production of sheath/core bicomponent fibres, comprising a spinneret plate having at least one counter-bore terminating in an extrusion orifice, a distributor plate spaced apart from but facing the spinneret plate to provide a liquid channel there-between for communication with a source of sheath-forming material, the distributor plate being provided with an aperture opposite each orifice in the spinneret plate and which communicates with a source of core-forming material, and a plateau-like protrusion extending about the axis common to the aperture of the distributor plate and the extrusion orifice of the spinneret plate to constrict the liquid channel in a region surrounding the entrance to the counter-bore of the extrusion orifice the improvement being that there is provided a means of restricting the entrance to the counter-bore.

4,251,201

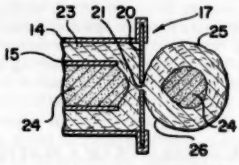
EXTRUSION APPARATUS

Janusz D. Krysiak, 5058 N. Ridgeway, Chicago, Ill. 60625

Filed Sep. 18, 1978, Ser. No. 943,181

Int. Cl.³ A21C *3/00*

U.S. Cl. 425—132 **7 Claims**



1. Apparatus for preparation of a shaped article having a forward and rearward portion and wherein a coating material encloses a filling material, said apparatus comprising:

inner and outer longitudinally-extending extrusion conduits, said outer conduit being of greater length than said inner conduit;

means for intermittently supplying a coating material to and through said outer conduit;

means for intermittently supplying a filling material to and through said inner conduit;

iris valve means adjacent the terminal portion of said outer

conduit for smoothly shaping forward and rearward portions of the article, said iris valve means providing leaf closure means reversibly movable from an initial position, wherein they occlude said outer conduit, through intermediate positions wherein they partially occlude said outer conduit to a final position wherein they do not occlude said outer conduit; and,

means for sequentially activating the operation of said supply means and said iris valve means.

4,251,202

MOLDING DIE STEM WITH SLEEVE

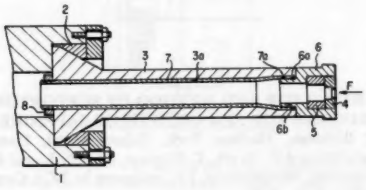
Akira Asari, Osaka; Tatsuhiko Noyori; Takahisa Tabuchi, both of Kobe, and Tetsuro Takehata, Osaka, all of Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Filed Sep. 27, 1978, Ser. No. 946,327

Claims priority, application Japan, Oct. 19, 1977, 52/141616[U]

Int. Cl.³ B29F *3/04*

U.S. Cl. 425—461 **4 Claims**



1. A die stem assembly for an extrusion press, comprising:

a elongate die stem having an axial bore therethrough and having a flat end surface at one end thereof, the bore being radially enlarged at said one end;

an elongate sleeve fitted in the die stem bore, and having one end radially enlarged complementally to the die stem bore;

a die holder having a flat, annular shoulder in abutting engagement with the die stem end surface and having an axial projection extending into said one end of the sleeve;

first connecting means engaged between the outer surface of the die holder projection and the inner surface of said one end of the sleeve; and

second connecting means engaged between the other end of the sleeve and die stem, holding the die holder and die stem together via the sleeve and connecting means, whereby axial compressive forces on said one end of the die holder and die stem are carried by the axially abutting shoulder and end surface and the connecting means remain substantially free of deforming stresses.

4,251,203

APPARATUS FOR PRODUCING ARTICLES FROM THERMOPLASTIC PARISONS

David C. Oas, Lenox, Mass., assignor to Beloit Corporation, Beloit, Wis.

Filed May 14, 1979, Ser. No. 38,893

Int. Cl.³ B29C *17/07*

U.S. Cl. 425—526 **11 Claims**

1. Apparatus for producing articles from thermoplastic parisons, comprising:

a mechanism cyclically oscillatable about a vertical axis and having at least two adjacent but angularly spaced vertically reciprocable combination parison pickup and mold loading devices, and at least two vertically reciprocable molded article transfer devices angularly spaced from each other and from said loading devices;

a pickup station located within reach of said loading devices and including means for presenting successive parisons at this station;

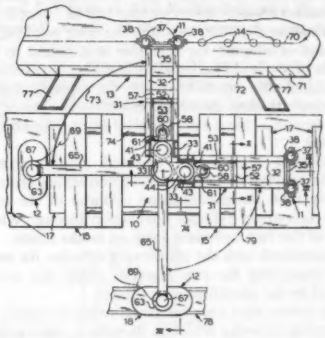
a pair of molding stations angularly spaced in respective opposite circumferential directions from said pickup station and within reach of said loading devices and said transfer devices, each of said molding stations having mold means adapted for receiving and molding the parisons into articles;

an article discharge station located between and angularly spaced from said molding stations and at the opposite side of said mechanism from said pickup station and within reach of said transfer devices;

and means for operating said mechanism and said devices in a step-by-step cycle comprising, in the following order:

(1) orienting one of said loading devices in a parison pickup position above said pickup station and a second of said loading devices above one of said molding stations, and in coordination therewith orienting one of said transfer devices above a second of said molding stations and a second of said transfer devices above said discharge station;

(2) lowering said loading devices and transfer devices so that said one loading device will pick up a parison at said pickup station and said second loading device will load a parison into said one molding station, and in coordination therewith said one transfer device will enter into molded article stripping relation to said second molding station and said second transfer device will discharge a molded article to said discharge station;



(3) raising said loading and transfer devices above said stations;

(4) turning said mechanism in one direction of oscillation and orienting said one loading device over said second molding station, orienting said second loading device over said pickup station, orienting said one transfer device over said discharge station and orienting said second transfer device over said one molding station;

(5) lowering said loading devices and said transfer devices downwardly so that said one loading device will load a parison into said second molding station, said second loading device will pick up a parison at said pickup station, and in coordinated relation therewith said one transfer device will discharge a molded article to said discharge station and said second transfer device will enter into article stripping relation to said one molding station;

(6) raising said loading devices and said transfer devices above said stations; and

(7) turning said mechanism in the opposite direction of oscillation and thereby returning said one loading device to said pickup station, returning said second loading device to said one molding station, returning said one transfer device to said second molding station and

returning said second transfer device to said discharge station, for repeating the operating cycle.

4,251,204

INJECTION UNIT FOR INJECTION MOLDING MACHINE

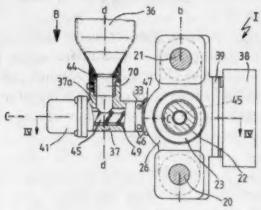
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Nov. 5, 1979, Ser. No. 91,563

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1978, 2847980; Feb. 27, 1979, 2907556; May 21, 1979, 2920584

Int. Cl.[3] B29F *1/00*

U.S. Cl. 425—582 **14 Claims**



1. In an injection unit which serves to plastify plastic raw material inside a plastification cylinder and to inject it into the injection molding die of an injection molding machine, which injection unit is adapted for selective attachment to the die closing unit of the injection molding machine in several different orientations, for injection in the die separation plane or perpendicularly thereto, in such an injection unit, an adjustable mounting structure for a raw material hopper comprising in combination:

a substantially horizontally oriented tubular connecting cylinder serving as a raw material conveying channel and forming with the plastification cylinder of the injection unit a right-angle cylinder connection through which the bores of the two cylinders form an intake chute;

means associated with the connecting cylinder for mechanically conveying the raw material along the conveying channel to the plastification cylinder;

a hopper connection near the distal other extremity of the connecting cylinder which is likewise a right-angle connection and which includes a substantially vertically oriented discharge chute between the base of the raw material hopper and the conveying means of the connecting cylinder; and

a seat and clamping means associated with the cylinder connection, giving the connecting cylinder an angular resettability about its axis, so that the raw material hopper can be oriented upright, for gravity discharge into the connecting cylinder, independently of the orientation of the plastification cylinder within a vertical plane, as determined by said seat and clamping means.

4,251,205

DEVICE FOR IGNITING THE FUEL GAS OF A FLAME CUTTING MACHINE

Georg Roeder, and Helmut Sachs, both of Frankfurt am Main, Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Frankfurt am Main, Fed. Rep. of Germany

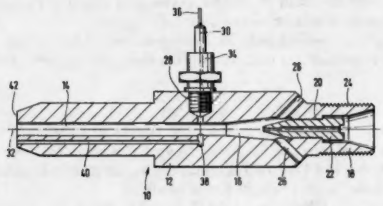
Filed Apr. 11, 1979, Ser. No. 29,356

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2819108

Int. Cl.[3] F23Q *9/08*

U.S. Cl. 431—263 **9 Claims**

1. In a device for igniting the fuel gas of a flame cutting machine, consisting of a bunsen burner with a cylindrical blend canal for the fuel-air mixture used for the pilot flame and of an ignition system associated with this canal, the improvement being a longitudinal bore parallel to said blend canal, said longitudinal bore being connected with said ignition system by



a transverse bore, and said transverse bore intersecting said blend canal.

4,251,206

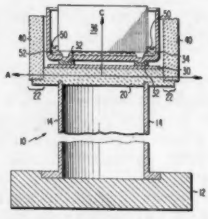
APPARATUS FOR AND METHOD OF SUPPORTING A CRUCIBLE FOR EFG GROWTH OF SAPPHIRE

Samuel Berkman, Florham Park; Robert Metzl, Hamilton Square; Richard E. Novak, E. Windsor, all of N.J., and David L. Patterson, Mountaintop, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 14, 1979, Ser. No. 38,829

Int. Cl.[3] F27D *5/00*

U.S. Cl. 432—5 **16 Claims**



1. A crucible support structure for supporting a crucible which is to be heated to at least 1800° C. comprising:

a pyrolytic graphite crucible support plate having a support surface for supporting said crucible;

support means for supporting the surface of said pyrolytic graphite crucible support plate opposite said support surface, said support means being made of a material having a relatively low coefficient of thermal expansion and a softening point of about 1140° C. and being usable to retain said support surface in a relatively stable position when the temperature of said support means does not exceed about 1300° C.;

the C axis of said pyrolytic graphite crucible support plate extending between said support surface and said opposite surface such that it is substantially perpendicular to the bottom of said crucible; and

said pyrolytic graphite having a thickness about said support surface and said opposite surface to prevent the portion of said support means engaged with said opposite surface from rising to a temperature in excess of about 1300° C. even when said support crucible is maintained at a temperature in excess of 1800° C.

4,251,207

PROCESS AND APPARATUS FOR PREHEATING COKING COAL

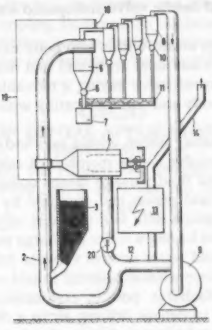
Kurt-Günther Beck, Essen-Bredeney; Georg Pollert, Essen, and Wolfgang Rohde, Essen-Heisingen, all of Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 14,977

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1978, 2807946

Int. Cl.[3] F26B *3/08*

U.S. Cl. 432—14 5 Claims



1. A method of pre-heating coking coal, comprising the steps of entraining the coal in a first gaseous carrier fluid which is at a temperature of about 80°–100° C.; passing the stream of coal and first gaseous carrier fluid through a preheating zone in which the carrier fluid preheats the coal; feeding towards said preheating zone, at a region thereof at which the coal has already been preheated to a predetermined temperature by the carrier fluid, a second gaseous fluid at a temperature of about 1200°–1700° C.; and admixing with said second gaseous fluid prior to entry into said region, a third gaseous fluid which is cooler than said second gaseous fluid, so that the mixture of said second and third gaseous fluids enters said region at a temperature of about 600°–1200° C.

4,251,208

PROCESS AND INSTALLATIONS FOR TRANSFERRING HEAT AND THEIR APPLICATIONS FOR THE TREATMENT OF RAW CEMENT

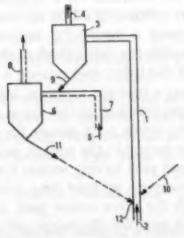
Jean-Pierre Lovichi, and Bernard Le Bras, both of Montelinar, France, assignors to LaFarge Conseils et Etudes, Paris, France

Filed Jan. 5, 1979, Ser. No. 1,113

Claims priority, application France, Jan. 18, 1978, 78 01337

Int. Cl.[3] F27B *15/00*

U.S. Cl. 432—14 13 Claims



1. A process for transferring heat between a hot gas stream circulating through a first cyclone cascade and a cold gas stream circulating through a second cyclone cascade comprising the steps of:

(a) introducing a solid particulate heat transfer agent into the hot gas stream circulating through said first cascade and passing said heat transfer agent with said hot gas stream in heat exchange relation through at least part of said first cascade;

(b) recovering hot heat transfer agent by cycloning said heat transfer agent from said hot gas stream in one of the cyclones of said first cascade;

(c) injecting said recovered heat transfer agent into said cold gas stream in said second cyclone cascade and passing said heat transfer agent with said cold gas steam in heat exchange relation through at least part of said second cascade;

(d) recovering cooled heat transfer agent from said second cascade by cycloning said heat transfer agent from said cold gas stream in a cyclone of said second cascade; and

(e) re-employing said recovered cool heat transfer agent for further heat exchange at a desired stage of one of said first and second cascades.

4,251,209

APPARATUS FOR CONSTRUCTING REGISTERED TEETH CASTINGS

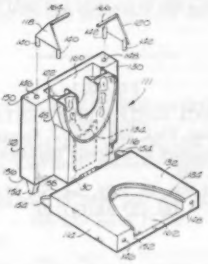
Ivan Bekey, 517 Erskine Dr., Pacific Palisades, Calif. 90272, and Roger S. Wolk, 28 Malibu Colony Dr., Malibu, Calif. 90265

Division of Ser. No. 745,712, Nov. 29, 1976, Pat. No. 4,161,067.

This application Nov. 13, 1978, Ser. No. 960,214

Int. Cl.[3] A61C *19/00, 9/00*

U.S. Cl. 433—34 6 Claims



1. A system for constructing castings of registered upper and lower dental impressions, comprising:

a dental tray for holding impression material for simultaneously taking registered upper and lower dental impressions, said tray comprising at least one non-porous septum dividing the tray into an upper and a lower chamber, said tray further comprising a substantially U-shaped peripheral retaining wall secured to at least a portion of the edge of said septum; and,

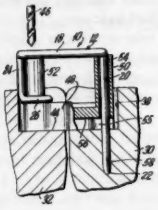
a mold having said dental tray positioned therein, said mold having first and second end walls that simultaneously form first and second mold cavities with the upper and lower dental tray chambers, respectively, the mold cavities being separated by said septum, said U-shaped peripheral retaining wall being clamped between said mold end walls,

whereby said tray carrying impressions of registered upper and lower teeth is adapted to be inserted into said mold so that casting material solidified in the mold cavities will produce simultaneous, separable, registered castings of registered upper and lower dental impressions.

4,251,210
DENTAL POSITIONING DEVICE

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 070,247, Aug. 27, 1979. This application Mar. 10, 1980, Ser. No. 128,840
Int. Cl.[3] A61C 3/02
U.S. Cl. 433—76 9 Claims



1. A dental positioning device for facilitating an accurate placement of a drill guide on teeth in order to drill spaced apart, aligned bores in which a dental retaining splint is to be received, said positioning device comprising:

a top member for overlying a portion of the drill guide;

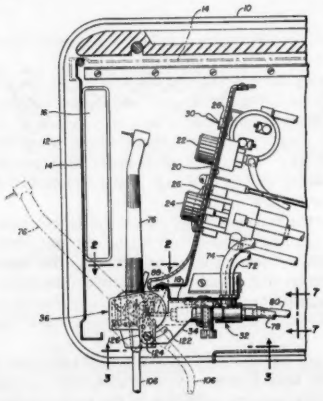
an anchoring pin extending from said top member for being received in a first bore drilled in the teeth; and

retaining means also extending from said top member for holding a tubular member of the drill guide so that a second bore can be drilled in the teeth using the tubular member as the guide, said retaining means being suitably spaced from said anchoring pin said retaining means including a vertical rod connected to said top member and terminating in a loop which lies in a horizontal plane, said loop being of a size to encircle and hold the tubular member.

4,251,211
FLUID CONTROL SYSTEM FOR DENTAL CONSOLE

Richard E. Plowman, York, and Bruce J. Spencer, Spring Grove, both of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Nov. 16, 1979, Ser. No. 95,009
Int. Cl.[3] A61C 1/02
U.S. Cl. 433—98 17 Claims



1. A fluid control valve system for a dental handpiece requiring air pressure and a supply of water incident to operation thereof, said system including:

(a) a compound valve body having

(b) an air inlet port at one end of said body provided with a valve seat,

(c) a valve spool in axial alignment with said port and having a control rod projecting beyond said air inlet port,

(d) spring means normally urging said valve spool against said seat in said body,

(e) an adjustable needle valve in the same end of said body as said air inlet port,

(f) a water inlet port in the same end of said body as said air inlet port and needle valve and spaced transversely therefrom,

(g) fluid passage means within said body extending between said air and water inlet ports and said needle valve,

(h) a water control valve having a movable valve member within said body and communicating with said water inlet port,

(i) a valve actuating piston within said body axially aligned with said movable valve member of said water control valve and said fluid passage means communicating with one face of said piston and operable by air pressure to engage said piston with said movable valve member,

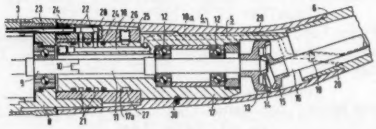
(j) said body also having a water discharge port in communication with said water control valve to deliver water to a dental handpiece when connected to said compound valve and an air discharge port in communication with said needle valve to deliver driving air to a dental handpiece when connected to said compound valve, and

(k) a foot control valve connectable to a source of air under pressure and having a discharge port connected by a conduit to said air inlet port of said body, said valve having only a single foot pedal to actuate the same for delivery of air to said compound valve body.

4,251,212
DENTAL HANDPIECE

Rainer Worschischek, Lorsch, and Werner Schuss, Heppenheim, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,446
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1978, 2855874
Int. Cl.[3] A61C 1/08
U.S. Cl. 433—126 4 Claims



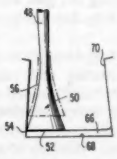
1. In a dental handpiece having a handpiece part, a drive motor part and means for mounting the handpiece part on the drive motor part for rotation on a longitudinal axis thereof, said handpiece part containing a first section adjacent the drive motor part containing a means for supporting a drive shaft section connected with the drive shaft of the drive motor part, said first section at the other end having a head part having a socket for mounting a tool for rotation, said head part having a drive shaft section coupled to the drive shaft section of the first section to form drive train means for transferring rotary motion of the drive motor to the socket, said drive motor part, first section and head part having means for forming a cooling agent line for conveying at least one cooling agent from a supply line through the drive motor part, the first section to a nozzle in said head part for discharge adjacent the tool, said cooling agent means including a rotatable coupling at said means for mounting between the cooling agent line sections in the drive motor part and the first section, said rotatable cou-

pling being formed by a pair of relative rotatable members with one member being an angular groove in communication with a passage in the other member the improvements comprising said pair of members being a tubular member in the first section and a bushing member secured to the motor part, said tubular member being coaxial with the drive shaft section and being releasably connected to the bushing member for rotation on said longitudinal axis, said head part having a protective sleeve surrounding the tubular member and said rotatable coupling, said handpiece including a releasable lock-in means for releasably holding the protective sleeve and head part on the tubular member of the first section, said lock-in means securing the sleeve member and head part against twisting and axial slippage relative to the tubular member and plug type means for connecting the cooling lines section contained in the tubular member to the cooling lines in the head part so that removal of the head part does not uncouple the rotatable coupling.

4,251,213
COMBINATION DENTAL APPLICATOR AND CARVER INSTRUMENT

Omer E. Paquette, 506 Hilliard Dr., Fayetteville, N.C. 28301

Filed Jan. 3, 1979, Ser. No. 684
Int. Cl.³ A61C *3/02*
U.S. Cl. 433—144 **3 Claims**



1. A combination dental applicator and carver instrument for applying self-hardening, liquid dental base material into a tooth cavity, and for subsequently trimming away excess hardened material, comprising:

a rod-like handle having an elongated shank extending from at least one end thereof and tapered down to a narrow cross section having a diameter no more than about 0.02 inches;

an elongated head integrally formed at the tip of said shank adjacent to its narrow cross section;

said head terminating in a flat, smooth, circular face and providing a sharp cutting edge at the periphery thereof; and

said head having a smooth side wall sharply tapered inwardly from said circular cutting edge to said narrow cross section of said shank said narrow cross section being about $\frac{1}{3}$ to $\frac{2}{3}$ of the diameter of the circular face so that when the instrument is disposed within the tooth cavity, the narrow cross section of the shank will minimize capillary action between the instrument and the wall of the cavity when the instrument is used to apply dental base material in its liquid state.

4,251,214
CLAMPING HANDLE FOR TOOTH ROOT CANAL INSTRUMENTS

Manfred Schnall, Unterhaching, Fed. Rep. of Germany, assignor to Vereinigte Dentalwerke, Munich, Fed. Rep. of Germany

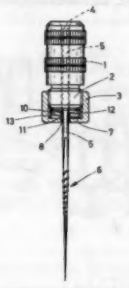
Filed Jan. 30, 1978, Ser. No. 873,624
Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703637
Int. Cl.³ A61C *0/00*
U.S. Cl. 433—147 **6 Claims**

1. A clamping handle, for holding a tooth root canal instrument, comprising:

(i) a handle body with a screw head formed thereon and including an axial bore through the handle body and the screw head for the accommodation of an instrument shaft,

(ii) a screw element threadable onto the screw head and including a bore aligned with the axial bore of the handle body, said bore of the screw element being of cross-section adapted to receive the instrument shaft with clearance, and

(iii) a clamping disc having a median plane and opposed major faces, said disc being disposed between the screw head and the screw element with one of its major faces abutting a radial surface of the screw head and the other of

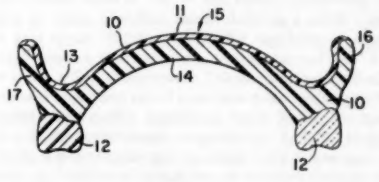


its major faces abutting an approximately parallel radial face of the screw element, said clamping disc including a through-bore adapted to receive the instrument shaft with clearance, the axis of said bore of the clamping disc being inclined with respect to a normal to the median plane of the disc, the cross-section of said through-bore relative to the cross-section of the shaft being such that, upon movement of the disc in the direction towards placing its median plane parallel with said radial surfaces, the portion of the disc bounding said through-bore will abut against the shaft.

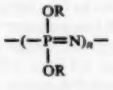
4,251,215
PHOSPHONITRILIC FLUOROELASTOMER LINED DENTURE

Paul May, New Orleans, and Luis R. Guerra, Metairie, both of La., assignors to Gulf South Research Institute, Baton Rouge, La.

Filed Sep. 10, 1979, Ser. No. 73,692
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—168 **10 Claims**



1. A prosthetic dental fixture comprising a biocompatible cushioning liner of a linear phosphonitrilic fluoroelastomer, having the general formula



wherein R is a fluorocarbon, bonded to the tissue bearing surfaces of the base of said prosthetic dental fixture.

4,251,216

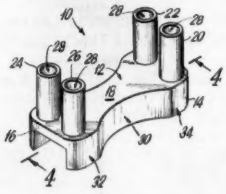
DENTAL SPLINTING DEVICE

Bernard Weissman, New York, N.Y., assignor to IPCO Corporation, White Plains, N.Y.

Continuation-in-part of Ser. No. 070,247, Aug. 27, 1979. This application Jan. 28, 1980, Ser. No. 116,006

Int. Cl.³ A61C *5/00*

U.S. Cl. 433—215 **17 Claims**



1. A dental splinting device comprising, an elongated bar-like body member having a tapered mid-section along its elongated direction, said mid-section being disposed between wider end sections to provide a dog-bone like configuration, a substantially flat surface on one face of said bar-like body member, and four cylindrical members extending perpendicularly from said flat surface for being received in bores provided in adjacent teeth with said body member being disposed in a channel extending between the adjacent teeth.

4,251,217

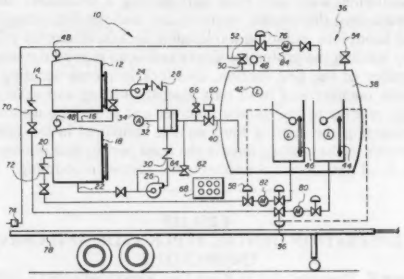
OIL WELL PRODUCTION TRAINING DEVICE

Robert W. Brasseux, Rte. B, Box 3905, New Iberia, La. 70560

Filed Jun. 25, 1979, Ser. No. 52,072

Int. Cl.³ G09B *25/02*

U.S. Cl. 434—219 **33 Claims**



1. An oil well production training system for simulating various well and pipeline conditions relative to oil well production comprising:

(a) means for simulating oil, gas, and other fluids;

(b) means for simulating downhole, surface and/or pipeline pressures;

(c) means for simulating changes in pressures; and

(d) means for monitoring and regulating said pressures wherein individuals being trained on said system learn the causes of pressure drops in downhole and/or surface and/or pipeline pressures and how to correct and/or shut down such systems, thereby simulating the correction and/or shut down of a producing well or wells.

4,251,218

METHOD OF ADJUSTING PH

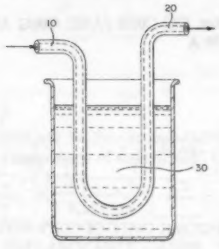
Albert A. Diggens, Newton, Mass., assignor to Orion Research Incorporated, Cambridge, Mass.

Continuation of Ser. No. 869,316, Jan. 13, 1978, Pat. No. 4,131,428, which is a continuation-in-part of Ser. No. 775,210, Mar. 7, 1977, abandoned. This application Aug. 7, 1978, Ser. No. 931,414

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.[3] G01N *27/10, 27/40, 27/46*

U.S. Cl. 23—230 R **20 Claims**



1. A method of raising the pH of a sample stream without dilution of the sample stream and without introducing any interfering, reactive, or test ions into the sample stream, comprising:

continuously passing a sample stream over one side of an inert ion-impermeable non-wetting membrane that is permeable to a low molecular weight base reagent; and

diffusing a low molecular weight base reagent through the membrane and into the stream by contacting the other side of said membrane with said base reagent, whereby the pH of the stream is raised without dilution of the sample stream and without introducing any interfering, reactive, or test ions into the sample stream.

4,251,219

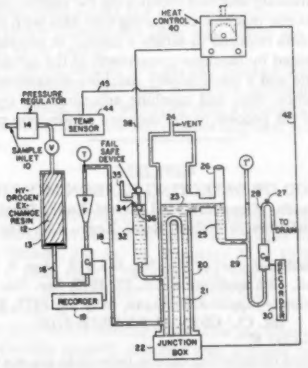
APPARATUS FOR AND METHOD OF DETERMINING CONTAMINANTS ON LOW PRESSURE CONDENSATE

Thurston E. Larson, 706 La Sell Dr.; Russell W. Lane, 1207 Devonshire Dr., and Chester H. Neff, 1808 Broadmoor Dr., all of Champaign, Ill. 61820

Filed Oct. 30, 1978, Ser. No. 955,914

Int. Cl.[3] G01N *27/46, 33/18;* **G05D** *9/00*

U.S. Cl. 23—230 R **18 Claims**



1. The method of continuously detecting low levels of chloride, sulfate, phosphate, nitrate and other inorganic ions of the order of 5 ug/l and less in relatively low pressure condensate having a temperature of approximately 40° C. or lower, which comprises passing a sample of said condensate at a substantially constant pressure of approximately 100 lbs. psi or less but above atmospheric pressure with a flow rate of approximately 175 ml/min through a bed of hydrogen exchange resin, electrically heating the effluent from said resin bed to raise its temperature to the atmosphere boiling temperature, automatically regulating said heating to maintain the temperature of said heated effluent constant at said atmospheric boiling temperature, driving off carbon dioxide and other gases from the heated effluent, and continuously measuring and recording the conductivity of the heated effluent.

4,251,220

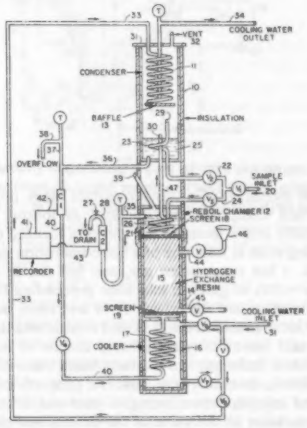
APPARATUS FOR AND METHOD OF DETERMINING HIGH PRESSURE, HIGH TEMPERATURE FEEDWATER CONTAMINANTS

Thurston E. Larson, 706 La Sell Dr.; Russell W. Lane, 1207 Devonshire Dr., and Chester H. Neff, 1808 Broadmoor Dr., all of Champaign, Ill. 61820

Filed Oct. 30, 1978, Ser. No. 955,972

Int. Cl.[3] G01N *27/02, 33/18;* **G05D** *9/00*

U.S. Cl. 23—230 R **7 Claims**



1. Purity analyzer apparatus for continuously monitoring and measuring low levels of chloride, sulfate, phosphate and nitrate, of the order of 1–5 μg/l in high pressure feedwater having a temperature of 350° F. and above, comprising means defining an upper chamber, means defining a reboil chamber below said upper chamber, means for supplying a sample of said high presure feedwater at a temperature of 350° F. and above and at a flow rate between 250 ml/min/and 1000 ml/min to both said upper and reboil chambers over separate paths, an adjustable small orifice regulating valve having an opening which is in the approximate range of 0.01" to 0.02" in each of said paths, a bed of hydrogen exchange resin below said reboil chamber and separated therefrom by a screen through which effluent from said bed can flow, a perforated water distributor plate at the bottom of said resin bed, first and second flow-type conductivity cells, means defining a water flow path from the lower part of said upper chamber to said first cell, a cooling chamber having a hollow cooling coil one end of which communicates with the bottom of said resin bed through said distributor plate and the other end of which communicates with said first cell, whereby water passing from said first cell to said resin bed is cooled, an adjustable valve located between said other end and said first cell for regulating the flow rate through said resin bed, means defining a water flow path from said reboil chamber to said second cell, and conductivity re-

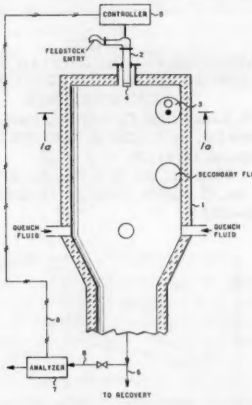
cording and indicating means electrically connected to both cells.

4,251,221

METHOD AND APPARATUS FOR FINE-TUNING IN CARBON BLACK PRODUCTION

Oliver K. Austin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 30, 1979, Ser. No. 43,872
Int. Cl.³ C09C *1/48*
U.S. Cl. 23—230 A **20 Claims**



1. The operation of a furnace carbon black producing process which comprises introductions as follow: Introducing tangentially into a locus at one end of a furnace carbon black producing zone at least one of a hot combustion gas producing material, a hot combustion gas, and hot air, in a manner to create a vortex of gases in said zone proceeding from said end of said zone toward the other end of said zone; introducing at another locus at said one end of said zone substantially into the axis of said vortex of gases formed therein at least one of a carbon black make gas and a carbon black make oil, producing carbon black, determining at least one property of said carbon black and suitably repositioning at least one of said introductions responsive to the value of the determined property until said determined property of said carbon black has a desired value.

4,251,222

SENSITIZERS FOR PEROXIDATIVE ACTIVITY TESTS

William I. White, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 17, 1979, Ser. No. 104,552
Int. Cl.³ G01N *31/22, 33/48, 33/52*
U.S. Cl. 23—230 B **4 Claims**

1. A test composition for detection of peroxidatively active substances comprising an indicator capable of being oxidized in the presence of a peroxidatively active substance to provide a color change, an oxidizing agent effective to oxidize said indicator, and 10H-pyrido [3,2-b]-[1,4]benzothiazine as a sensitizing agent.

4,251,223

SENSITIZERS FOR PEROXIDATIVE ACTIVITY TESTS

William I. White, Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Dec. 17, 1979, Ser. No. 104,665
Int. Cl.³ G01N *31/22, 33/48, 33/52*
U.S. Cl. 23—230 B **4 Claims**

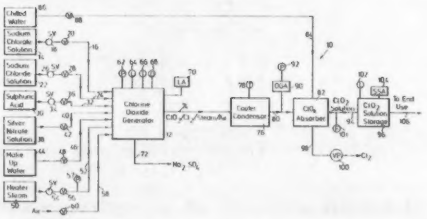
1. A test composition for detection of peroxidatively active substances comprising an indicator capable of being oxidized in the presence of a peroxidatively active substance to provide a color change, an oxidizing agent effective to oxidize said indicator, and 4-azafluorene as a sensitizing agent.

4,251,224

CONTROL SYSTEM FOR CHLORINE DIOXIDE PLANTS

Gerald Cowley, Mississauga, and Richard Swindells, Caledon, both of Canada, assignors to ERCO Industries Limited, Islington, Canada

Filed Sep. 13, 1979, Ser. No. 74,958
Claims priority, application United Kingdom, Sep. 19, 1978, 37336/78
Int. Cl.³ C01B *11/02;* G06G *7/58*
U.S. Cl. 23—230 A **14 Claims**



1. In a process for the continuous production of an aqueous solution of chlorine dioxide by continuously reducing chlorate ions with chloride ions in the substantial absence of any reducing agent for chlorine and in an acid aqueous reaction medium to form a product gas stream containing chlorine dioxide and chlorine and continuously dissolving chlorine dioxide fom said product gas stream in water, the improvement which comprises machine controlling said process by the operations of:

(a) continuously machine analyzing the product gas stream to determine the concentrations of chlorine dioxide and chlorine therein and machine computing the efficiency of conversion of chlorate ions to chlorine dioxide from said machine analysis;

(b) continuously machine analyzing said aqeous solution of chlorine dioxide to determine the concentration of chlorine dioxide therein, continuously machine monitoring the water flow rate to said dissolving step, and machine computing the rate of production of chlorine dioxide and chlorine from said concentration determination and water flow rate;

(c) continuously machine monitoring the operational data of the process, machine comparing said data with the operational data required to satisfy a change in production rate determined by machine comparison of the actual production rate and a continuously machine-determined desired production rate, and machine adjusting the operational data of the process to the required production rate.

4,251,225

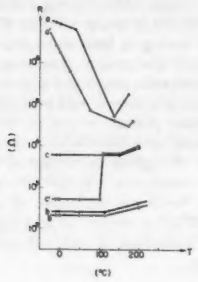
METHOD OF DETECTING CARBON MONOXIDE

Takashi Handa, Kamakura, and Koichi Endo, Inagi, both of Japan, assignors to Nohmi Bosai Kogyo Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 885,013, Mar. 9, 1978, abandoned. This application Jul. 27, 1979, Ser. No. 62,513
Claims priority, application Japan, May 19, 1977, 52-57117
Int. Cl.³ G01N *27/04;* H01B *1/08*
U.S. Cl. 23—232 E **2 Claims**

1. A method of detecting carbon monoxide gas at a temperature of from −10° to 100° C., by using, as the only carbon monoxide gas detecting element, an element consisting of stannic oxide as the main component, antimony, and platinum,

which element is prepared by mixing stannic oxide, antimony trioxide and platinum in atomic ratios of Sb/Sn=at least 0.005,



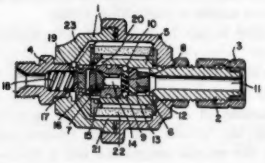
Pt/Sn=at least 0.004 and Sb/Pt=at least 0.005, and sintering said mixture at a temperature of at least 625° C.

4,251,226

DEVICE FOR PREVENTING BACKFIRE OF INFLAMMABLE GASES

Shigeo Nishikawa, Osaka, Japan, assignor to Yamato Sangyo Inc., Osaka, Japan

Filed Dec. 20, 1979, Ser. No. 105,547
Int. Cl.³ F17D *3/00*
U.S. Cl. 48—192 **6 Claims**



1. A device for preventing backfire of inflammable gas comprising:

a main case;

a cylinder provided in the main case and having:

a valve casing whose rear edge shuts a gas induction passage when said valve casing is pushed backward by high pressure provided with said cylinder, and

a check valve that has a repelling magnet located in front of said valve casing and that shuts and opens both a gas supplying passage and flow way which are formed in said valve casing;

a balance spring located at a gas exit passage; and

a repelling magnet case that is pushed backward by said balance spring, and is equipped with a repelling magnet in frontal alignment with said magnet disposed in said check valve.

4,251,227

METHOD FOR PRODUCING SNG OR SYNGAS FROM WET SOLID WASTES AND LOW GRADE FUELS

Donald F. Othmer, 333 Jay St., Brooklyn, N.Y. 11201

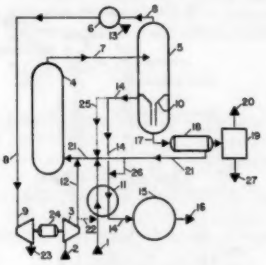
Filed Aug. 2, 1978, Ser. No. 930,327
Int. Cl.³ C10J *3/00*; C10K *3/00*
U.S. Cl. 48—197 R **36 Claims**

1. In the process for making a burnable gas from an original solid combustible organic material with original water in an amount of from ⅓ to thirty times the dry weight of the solids of said combustible material, at least some of said water being inseparable by any mechanical means, said burnable gas being formed in part by the chemical reaction of the carbon of said original combustible material with oxygen and with a part of said original water, the steps comprising:

(a) reacting said original combustible material in first chemical reactions in a reaction zone with an oxygen containing gas in the presence of a continuous aqueous phase containing at least a part of said original water at a temperature of between 175° C. and 325° C. and a pressure of between 10 and 100 atmospheres so that:

(i) said solids of said original combustible material are partially oxidized, thereby producing heat, a part of said heat being used in raising the temperature of said original solid combustible material to the said temperature of said reaction zone, and a part of said heat being used to produce steam under said pressure; and so that:

(ii) some of said original water which was inseparable can now be separated by a mechanical means;



(b) mechanically separating a part of said continuous aqueous phase from the solid residue of said combustible material so that 1 pound of said solid residue on a dry basis after said mechanical separation contains no more than from ½ pound to 2 pounds of water, some part of which is a part of said original water;

(c) passing to a gasifier, without substantial loss of water, without substantial cooling and without substantial loss of pressure, said separated solid residue and some part of said original water which remains therewith; and

(d) converting, at a pressure no less than that of said reaction zone, in said gasifier to a burnable gas by second chemical reactions with a second oxygen containing gas at least a part of the carbon of said separated solid residue.

4,251,228

PRODUCTION OF CLEANED AND COOLED SYNTHESIS GAS

James R. Muenger, Beacon; Edward T. Child, Tarrytown, and Albert Brent, Huntington, all of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

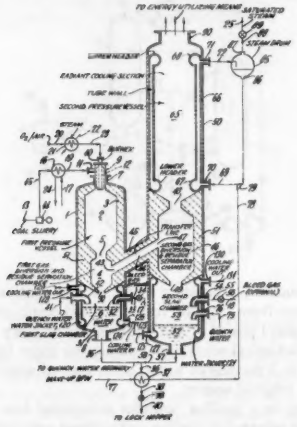
Filed May 30, 1979, Ser. No. 43,918
Int. Cl.³ C10K *1/02*
U.S. Cl. 48—197 R **25 Claims**

1. A process for separating entrained solid matter and slag from a hot raw gas stream comprising H_2, CO, CO_2, entrained solid matter and slag, and one or more materials from the group H_2O, H_2S, COS, CH_4, NH_3, N_2, and A as produced in the reaction zone of a gas generator by the partial oxidation of solid carbonaceous fuel at a temperature in the range of about 1800° to 3000° F. and a pressure in the range of about 10 to 190 atmospheres, and cooling said hot raw gas stream comprising:

(1) passing said hot raw gas stream directly from said reaction zone downard through a connecting passage at high velocity into a first thermally insulated unobstructed free-flow gas diversion and residue separation chamber where the velocity of the gas stream is reduced, said first residue separation chamber having a net internal volume which is smaller than than that of said reaction zone and having bottom and side outlets, separating by gravity a portion of

said solid matter and slag from the gas stream without substantially reducing the temperature of the gas stream, and passing said portion of separated material by gravity through said bottom outlet into a first slag pot located directly below said first gas diversion and residue separation chamber;

(2) passing about 80.0 to 100 vol. % of the hot gas stream from said first gas diversion and residue separation chamber with a portion of said solid matter and slag removed through said side outlet and then through a thermally insulated transfer line directly into a second thermally insulated unobstructed freeflow gas diversion and residue separation chamber where the velocity of the gas stream is changed, the second gas diversion and residue separation means being sized larger than said first gas diversion and residue separation chamber and having bottom and top outlets and being located in a separate vertical pressure vessel from that containing said first gas diversion and



residue separation chamber, separating additional solid matter and slag from the gas stream by gravity without substantially reducing the temperature of the gas stream, and passing said separated portion of material into a second slag pot located directly below said second gas diversion and residue separation chamber;

(3) passing about 80.0 to 100 vol. % of the hot gas stream from said second gas diversion and residue separation chamber with a portion of said solid matter and slag removed upward through said top outlet and directly into the bottom of and upward through the unobstructed central vertical passage of a radiant cooling zone at a reduced velocity simultaneously cooling said gas stream and removing additional solid matter and slag from said gas stream, by gravity, and passing said separated portion of material into said second slag pot; and

(4) removing a cleaned gas stream from said radiant cooling zone at a reduced temperature.

4,251,229

STABILIZED FUEL SLURRY

Akihiro Naka, Joyo; Shuichi Honjo, Kyoto, and Kaoru Aoike, Niigata, all of Japan, assignors to Dai-Ichi Kogyo Seiyaku Co., Ltd., Kyoto, Japan

Filed Sep. 28, 1978, Ser. No. 946,726

Claims priority, application Japan, Oct. 3, 1977, 52-119230; Oct. 3, 1977, 52-119231; Oct. 4, 1977, 52-119663; Oct. 4, 1977, 52-119664; Oct. 5, 1977, 52-120216; Feb. 21, 1978, 53-19265

Int. Cl.³ C10L *1/18*

U.S. Cl. 44—51 **18 Claims**

1. A fuel slurry composition comprising a fuel oil, 10 to 60 weight % of pulverized coal having an average particle size of less than 200 microns, less than 50 weight % of water and an effective amount of a stabilizing agent selected from the group consisting of:

(a) a polyether-type adduct havng a molecular weight from 1,000 to 100,000 between a lower alkylene oxide and a compound having at least three active hydrogen atoms selected from the group consisting of an alcohol, an amine, a carboxylic acid and a phenol,

(b) an inorganic acid ester of said polyether-type adduct, and

(c) a cross-linked product of said polyether-type adduct or said inorganic acid ester with a cross-linking agent selected from the group consisting of a polyisocyanate, a polyepoxy compound, a polyaldehyde, a polycarboxylic acid and a functional derivative of said polycarboxylic acid, said effective amount of said stabilizing agent minimizing sedimentation of said pulverized coal from said composition.

4,251,230

COAL SUSPENSIONS IN ORGANIC LIQUIDS

Edgar W. Sawyer, Jr., Hagerstown, Md., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 810,121, Jun. 27, 1977, Pat. No. 4,147,519. This application Oct. 26, 1978, Ser. No. 955,065

The portion of the term of this patent subsequent to Apr. 3, 1996, has been disclaimed.

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 **34 Claims**

1. A mobile combustible suspension comprising:

carbonaceous solids in particulate form;

a combustible liquid hydrocarbon for dispersion of said solids;

a gelling grade clay to cause the combustible liquid hydrocarbon to become gelled; and

an alkanolamide of a carboxylic acid as a surfactant for dispersing the solids and clay within the suspension whereby the mobile suspension has a relatively high apparent viscosity at low shear and a relatively low apparent viscosity at high shear.

4,251,231

DIRECT PROCESS FOR THE PRODUCTION OF GASOHOL FROM FERMENTATION MIXTURES

James L. Baird, Winchester, Mass., assignor to Artisan Industries Inc., Waltham, Mass.

Filed Sep. 13, 1979, Ser. No. 75,012

Int. Cl.³ C10L *1/02*

U.S. Cl. 44—56 **22 Claims**

1. A process for the direct preparation of gasohol from a low-content alcohol-containing solution from a fermentation broth, which process comprises:

(a) mixing in a liquid-liquid extraction process a fermentation broth containing a methanol- or ethanol-water solution, the broth containing up to about 12% by volume of the methanol or ethanol, a gasoline composition and a small amount of up to about 30%, based on the alcohol content of the water-alcohol solution, of a solvent for the methanol or ethanol and miscible in the gasoline;

(b) removing from the extraction process an essentially alcohol-free water;

(c) removing a gasohol composition containing water of saturation, which composition contains from up to about 15% by volume of combined alcohol;

(d) removing at least some of the water of saturation from the gasohol composition; and

(e) recovering a substantially anhydrous gasohol.

4,251,232

AMINE DERIVATIVES OF THIO-BIS-LACTONE ACIDS IN COMBINATION WITH COADDITIVE HYDROCARBONS ARE FLOW IMPROVERS FOR MIDDLE DISTILLATE FUEL OILS

Stanley J. Brois, Westfield; Antonio Gutierrez, Mercerville, and Nicholas Feldman, Woodbridge, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 875,239, Feb. 6, 1978, Pat. No. 4,142,866. This application Sep. 21, 1978, Ser. No. 944,260

The portion of the term of this patent subsequent to Mar. 6, 1996, has been disclaimed.

Int. Cl.³ C10L 1/14

U.S. Cl. 44—63 **13 Claims**

1. A fuel composition comprising a major proportion of a distillate petroleum fraction having an atmospheric boiling range of from about 120° C. to about 400° C. and from about 0.01 to 1.0 wt. % of a flow and filterability improving combination comprising: (a) 1 to 5 parts by weight of an amine derivative of thio-bis-(C_{12} to C_{50} alkyl lactone carboxylic acid); and (b) 1 to 100 parts by weight of a coadditive hydrocarbon of the class consisting of an oil-soluble amorphous hydrocarbon having less than about 5 wt. % of normal parafin hydrocarbons, a hydrogenated polybutadiene having a number average molecular weight ranging from 400 to 10,000 and mixtures thereof.

10. Bis-(di-tallow imide) of dithio-bis-(pentadecyl lactone acid).

4,251,233

LIQUID HYDROCARBON-SOLUBLE RARE EARTH CHELATES PREPARED FROM THE NOVEL LIGAND 2,2,7-TRIMETHYL-3,5-OCTANEDIONE AND FUELS CONTAINING SAME

Robert E. Sievers, and Thomas J. Wenzel, both of Boulder, Colo., assignors to University Patents, Inc., Norwalk, Conn.

Filed Mar. 5, 1979, Ser. No. 17,459

Int. Cl.³ C10L 1/18

U.S. Cl. 44—68 **11 Claims**

1. A liquid hydrocarbon-soluble rare earth metal chelate in which the ligand is 2,2,7-trimethyl-3,5-octanedione, and mixtures thereof.

4,251,234

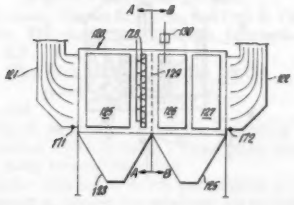
HIGH INTENSITY IONIZATION-ELECTROSTATIC PRECIPITATION SYSTEM FOR PARTICLE REMOVAL

Ching M. Chang, Williamsville, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 21, 1979, Ser. No. 77,848

Int. Cl.³ B03C 3/12

U.S. Cl. 55—2 **13 Claims**



1. In a method for removing particles from a feed gas stream in which the particles entrained in said feed gas stream are electrostatically charge by passage through a flow restricted high intensity discharge throat-shaped region and thereafter passed through an enlarged cone-shaped discharge region, with a multiplicity of such throat-shaped and enlarged cone-shaped discharge regions being transversely positioned in the feed gas flow path and spaced from each other such that each particle passes through one throat-shaped region and one cone-shaped region, each cone-shaped discharge region having a discharge mouth with all such discharge mouths being in the same transverse plane, and the electrostatically charged particles are thereafter collected in a downstream plate-wire electrode type electrostatic precipitation step, the improvement comprising: providing an open gas flow restrictor opposite each discharge mouth so as to restrict the gas flow containing electrostatically charge particles entering said electrostatic precipitation step and with each flow restrictor defining a restriction having an effective diameter, disposing the flow restrictors normal to the gas flow direction and in a single transverse plane substantially parallel to and longitudinally displaced from the discharge mouth transverse plane such that the open area of each gas flow restrictor is between 5% and 50%, with the effective diameter of each restriction being between $\frac{1}{4}$ and 2 times the diameter of the respective enlarged cone-shaped discharge mouth, and with each restriction in the longitudinal centerline region of said flow restrictors being at least as high as the restriction in the circumferential region of such flow restrictor.

4,251,235

PROCESS FOR THE SEPARATION OF NH_3 AND CO_2 FROM MIXTURES OF NH_3, CO_2 AND WATER

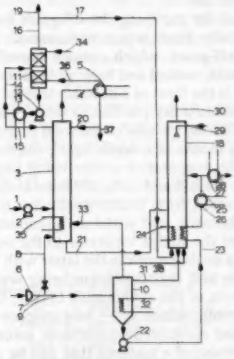
Andreas J. Biermans, Urmond, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 847,654, Nov. 1, 1977, Pat. No. 4,163,648. This application Apr. 16, 1979, Ser. No. 30,375

Claims priority, application Netherlands, Apr. 29, 1978, 7804668

Int. Cl.³ B01D 53/14, 19/00

U.S. Cl. 55—70 **14 Claims**



1. In a process for the separate recovery of ammonia substantially free of carbon dioxide and water, and carbon dioxide substantially free of ammonia and water, from a mixture essentially containing ammonia and carbon dioxide, said process comprising the steps of:

separating an ammonia off-gas substantially free of carbon dioxide and water by rectification in an ammonia separation zone, and removing the resulting residual liquid phase containing ammonia, carbon dioxide and water therefrom and introducing it into a carbon dioxide separation zone;

separating a carbon dioxide off-gas substantially free of ammonia and water by rectification in a carbon dioxide separation zone and removing the resulting residual liquid phase containing ammonia, carbon dioxide and water therefrom and introducing it into a desorption zone; and

separating an off-gas containing ammonia, carbon dioxide and water vapor from a liquid phase of desorption water substantially free of ammonia and carbon dioxide, and introducing at least a portion of said off-gas into said ammonia separation zone;

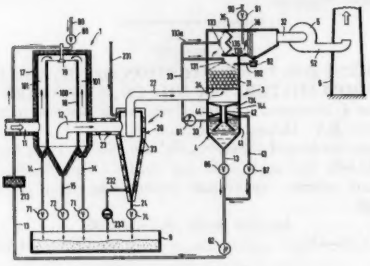
the improvement comprising introducing into the portion of said carbon dioxide separation zone from which said residual liquid phase is removed, an ammonia containing gaseous phase in an amount sufficient to make said residual liquid phase removed therefrom lean with respect to carbon dioxide.

4,251,236

PROCESS FOR PURIFYING THE OFF-GASES FROM INDUSTRIAL FURNACES, ESPECIALLY FROM WASTE INCINERATION PLANTS

Volker Fattinger, Arlesheim, and Jürg Schneider, Muttenz, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 13, 1978, Ser. No. 960,502
Claims priority, application Switzerland, Nov. 17, 1977, 14060/77; Oct. 20, 1978, 10877/78
Int. Cl.³ B01D *47/00*
U.S. Cl. 55—84 **25 Claims**



1. A process for purifying the off-gases from industrial furnaces, especially from waste incineration plants, in which process the off-gases, which contain harmful substances selected from acid, neutral and basic pollutants in the gaseous or solid form or in the form of a mist, are treated in an evaporative cooler and then in a dry purifier, in which they are freed from at least a substantial portion of the solid pollutants, and then in a scrubber by means of a wash liquid, the temperature of the off-gases in the evaporative cooler being kept above the dew point, and the wash liquid in the scrubber being cycled through a sludge separator, from which suspension or solution of pollutants is withdrawn, said withdrawn suspension of pollutants being fed from the sludge separator to the evaporative cooler and mixed in a mixing space in the latter with the hot off-gases, with the gases and the suspension being separately removed from the bottom of the evaporative cooler; those walls of the evaporative cooler which come into contact with the mixture of off-gases and recycled suspension or solution of pollutants and which consist of a material that can be corroded by said mixture at room temperature being heated to a temperature above the dew point by passing a heating medium through a heating unit which surrounds said walls.

4,251,237

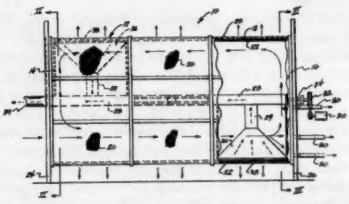
AIR FILTER AND METHOD OF FILTERING

Randall E. Smith, Rte. 10, Box 312, Spartanburg, S.C. 29303

Filed Feb. 13, 1980, Ser. No. 121,048
Int. Cl.³ B01D *46/04*
U.S. Cl. 55—96 **15 Claims**

1. An improved self-cleaning filter unit for removing contaminants from air directed therethrough comprising a housing having a pair of spaced walls and a peripherally disposed filter medium extending therebetween to define a filter compartment, an air inlet opening in a portion of one wall of sufficient size for introducing air to be filtered into the compartment and initially directing the same in a path of travel to the other wall before its passage outwardly through said filter medium, movable nozzle means in the filter compartment for traversing the filter medium to remove contaminants collected thereon, conduit means connected to the nozzle means for conveying the removed contaminants from the filter compartment, and one or more discharge openings in a portion of said other wall which lies in the path of the travel of the air directed from said inlet opening to permit direct removal of a portion of the contaminants in the air stream from the compartment before its passage through said filter medium.

10. An improved method of filtering airborne contaminants from air directed through a filtration unit having a pair of spaced walls and a peripherally disposed filter medium extending therebetween to define a filtration compartment, compris-



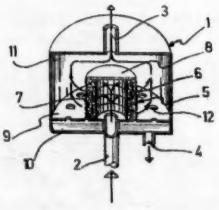
ing the steps of directing the air into the compartment through an air inlet opening in one wall thereof and in an initial stream across the compartment to the other end wall for deflection thereby in a generally circular path about the compartment before passage through said filter medium, removing an initial portion of the contaminants carried in the air stream from the compartment through one or more discharge openings in said other end wall before its passage through the peripherally disposed filter medium, and removing contaminants collected on the filter medium during passage of air therethrough from the filter compartment to clean the filter medium during filtration.

4,251,238

METHOD AND APPARATUS FOR DEMISTING GASES

Jozef Claes, Balen, and Roger De Bruyne, Zulte, both of Belgium, assignors to N. V. Bekaert S.A., Zwevegem, Belgium

Continuation of Ser. No. 722,614, Sep. 13, 1976, Pat. No. 4,144,040. This application Jan. 15, 1979, Ser. No. 3,344
Claims priority, application Belgium, Sep. 12, 1975, 159966
The portion of the term of this patent subsequent to Mar. 13, 1996, has been disclaimed.
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—97 **4 Claims**



3. A method for filtering a stream of gas at high efficiency for removing liquid particles at least some of which are of submicron dimensions therefrom comprising passing the stream of gas at a velocity of less than 70 cm/sec through a filter material comprising a plurality of adjacent non-woven randomly orientated metal fiber webs of a fiber diameter less than 50 μm moistenable by said liquid particles, said webs having a porosity of at least 0.985, whereby said liquid particles may diffuse from the gas stream to said filter material and at least some of said submicron particles are thereby removed

from said gas stream, and removing captured liquid from the filter material.

4,251,239

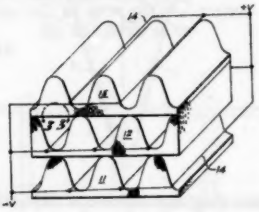
MULTI-PURPOSE CERAMIC ELEMENT

Robert A. Clyde, 6900 SW. 112 St., Miami, Fla. 33156, and William B. Crandall, Snyder Rd., Alfred Station, N.Y. 14803

Continuation-in-part of Ser. No. 914,610, Jun. 12, 1978, abandoned. This application Aug. 28, 1978, Ser. No. 937,085

Int. Cl.[3] **B03C** *3/62*; **C04B** *21/08*; **B01D** *39/20*; **B01J** *35/04*

U.S. Cl. 55—132 **13 Claims**



1. A ceramic ceramic element for positioning in a spanning relation of a conduit as a bed through which fluid flowing in the conduit is constrained to pass, and comprising:

a ceramic sponge body having an upstream face and a downstream face, and including a network of randomly located interconnected closely adjacent ceramic filaments defining a plurality of interconnected cavities suitable for providing a tortuous fluid flow path through the bed, which fluid flow path is partially obstructed by the ceramic filaments; and

said ceramic sponge body having a plurality of internal voids of a predetermined definite pattern, each of said voids having an upstream zone and a downstream zone and the surface area surrounding each void being composed of a multiplicity of closely spaced terminal end zones of said ceramic filaments and said voids providing substantially an unobstructed selected pathway at predeterminal definite locations in said ceramic sponge bed to reduce the pressure drop of the fluid passing through the bed to a predetermined amount.

10. The ceramic element as set forth in claim **1** wherein means are provided adjacent said ceramic sponge body to charge particles causing the particles to adhere to the sponge body.

4,251,240

PUMP VALVE ASSEMBLY

Walter W. Brennan; Charles R. Myers, and Paul E. Perry, all of Jacksonville, Fla., assignors to Griffin International, Inc., Irvington, N.Y.

Filed May 11, 1979, Ser. No. 38,178

Int. Cl.[3] **B01D** *19/00*

U.S. Cl. 55—168 **9 Claims**

1. A gas-liquid separation device for separating gas from liquids in a system which includes a liquid pump means and a gas vacuum pump means comprising:

a tank member enclosed at its top and adapted to communicate through its bottom for receiving gas entrained liquid to be separated from the intake chamber of the liquid pump means;

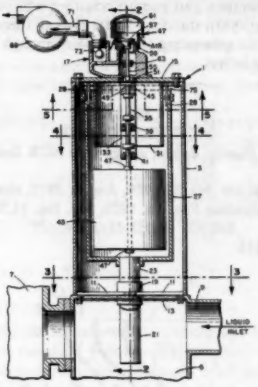
a container member mounted within said tank member;

a conduit connecting the interior of said container member and the intake chamber of the liquid pump means, said conduit terminating in said intake chamber at a point below the liquid entrance into the liquid pumping chamber of the pumping means;

a baffle member concentric with the periphery of the walls of said container member connected to the top of said tank member and extending downwardly into said container member;

means responsive to the liquid level in said container member;

a gas discharge valve means in the top of said tank member within the area defined by the walls of said baffle member, said gas discharge valve means being operatively connected to said liquid level responsive means in said container member;



a gas exhaust chamber connected with the vacuum pump means and said gas discharge valve means;

an air valve to the atmosphere in said exhaust chamber;

means for connecting said air valve with said gas discharge valve whereby the movement of one of said valves is responsive to the movement of the other.

4,251,241

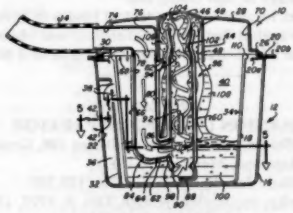
CYCLONE-TYPE ASPIRATED SEPARATOR FOR WASHING DIRT-LADEN DRY AIRSTREAMS

Eugene L. Bothun, Berthoud, Colo., assignor to Windsor Industries, Inc., Denver, Colo.

Filed Jul. 5, 1979, Ser. No. 54,845

Int. Cl.[3] **B01D** *47/16*

U.S. Cl. 55—238 **9 Claims**



1. A dirt separation and collection apparatus for use in washing dirt from an essentially dry dirt-laden airstream under pressure which comprises: a first open-topped vessel and a lid therefor cooperating in assembled relation to define a cannister with air inlet and air outlet openings; a first open-topped tubular member disposed in upright position inside the cannister with the open upper end thereof spaced beneath the lid said first tubular member having a first opening in its lower end for admitting water thereto upon immersion in a supply of the latter contained within said first vessel, and a second opening above the first; and a second tubular member terminating in an upturned nozzle connected to said inlet opening so as to re-

ceive dirt-laden air under pressure from the air inlet opening and said nozzle being constructed and connected to said second opening so as to deliver the air upwardly and tangentially into the first tubular member through the second opening therein, said first and second tubular members coacting to aspirate water into the incoming dirt-laden airstream and spiral the resulting dirt-laden air/water mixture upwardly and out against the cannister lid through the open upper end of said first tubular member, and said lid coacting with said first tubular member to return the dirty water issuing therefrom to said first vessel while exhausting the clean air through the air-outlet opening in the latter.

4,251,242

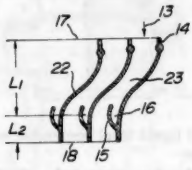
MIST ELIMINATOR

Kazuhiko Ito, Handa, Japan, assignor to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 821,958, Aug. 4, 1977, abandoned. This application Feb. 12, 1979, Ser. No. 11,764

Int. Cl.³ B01D *45/16, 45/18*

U.S. Cl. 55—242 **3 Claims**



1. A mist eliminator comprising, a plurality of blades, said blades being spaced apart in parallel to one another to define passages for the flow of mist therebetween, and to define an inlet and outlet for each passage, each of said blades being step-like and having a single step-like portion between the respective inlet-defining and outlet-defining edges of each of said blades, said step-like portion curving smoothly up to a single plateau of each of said blades, said plateau defining the outlet-defining edge of its respective blade and extending in a direction substantially parallel to the direction in which mist enters the eliminator; and

an elimination chamber located on each said plateau so that the distance between each said elimination chamber and the outlet-defining edge of its respective blade is less than the distance from said elimination chamber to the inlet-defining edge of that blade; and

wash nozzles located adjacent to said blades to spray washing water against that portion of each of said blades which is near the outlet-defining edge of each of said blades.

4,251,243

INDUCTION CYCLONIC SEPARATOR

Felipe Salete-Garces, Avenida Ano de Juarez 198, Granjas, San Antonio, Iztapalapa, Mexico (13, D.F.)

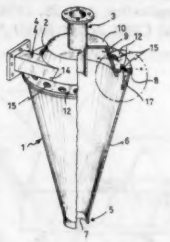
Filed Mar. 10, 1980, Ser. No. 128,785

Claims priority, application Mexico, Oct. 5, 1979, 179550

Int. Cl.³ B01D *45/12*

U.S. Cl. 55—261 **6 Claims**

1. An induction type cyclonic separator, particularly adapted for handling sticky materials, which comprises lower upwardly diverging frustoconical body means, upper downwardly diverging frustoconical body means, the downwardly opening larger diameter end of said upper frustoconical body means being of a diameter considerably smaller than the diameter of the upwardly opening upper end of said lower frustoconical body means, said upper frustoconical body means being introduced inwardly and downwardly of the upper larger diameter end of said lower frustoconical body means, such that the lower edge of said upper frustoconical body means will be arranged concentrically and inwardly spaced from the inner surface of the lower frustoconical body means and also spaced a distance below the upper edge of said lower frustoconical body means, annular lid means extending between the upper edge of said lower frustoconical body means and the outer surface of the conical wall of said upper frustoconical body means to close the space therebetween, a plurality of closeable openings extending throughout the circumference of said annular lid means, tangential inlet means arranged on the conical wall of said upper frustoconical body means, circular lid means closing the upper end of said upper frustoconical body means, suction duct means vertically arranged at the center of said circular lid means, and outlet means for discharging solid material, arranged at the lower end of said lower frustoconical body means.



4,251,244

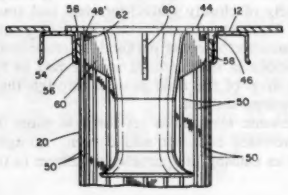
JET PULSE BAG TYPE COLLECTOR

Donovan C. Evenstad, Coraopolis, Pa., assignor to Wheelabrator-Frye Inc., Hampton, N.H.

Filed Mar. 12, 1979, Ser. No. 19,426

Int. Cl.³ B01D *46/04*

U.S. Cl. 55—302 **5 Claims**



1. In a jet pulse bag type collector having a horizontally disposed tube sheet with at least one opening through the tube sheet, a filter bag and cage assembly mounted to extend from the opening, means for support of said cage assembly from the tube sheet and means for support of the filter bag from the cage assembly and tube sheet with the open end of the bag in communication with said opening, and a venturi extending through the open end of the filter bag, the improvement wherein the cage assembly is supported on the venturi while the venturi is supported from the tube sheet comprising webs extending outwardly from the venturi for a distance to extend alongside the inner side of the cage assembly, a recessed portion extending inwardly from an outer edge of the webs, means extending inwardly from an upper portion of the cage assembly for engagement in the recessed portions of the webs whereby the cage assembly is retained by the webs of the venturi while in the assembled relation, and means for supporting the venturi from the tube sheet in which the filter bag is circular in cross section and in which the means for support of the filter bag comprises a ring member fixed to the upper end portion of the filter bag having an outside diameter greater than the diameter of the bag and an internal diameter greater than the outside diameter of the cage assembly, a support member depending

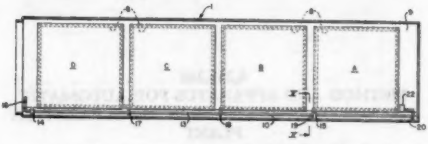
from the tube sheet about the opening and defining a tubular portion having a length greater than the length of the ring member, an internal diameter greater than the outside diameter of the ring member, and a lip extending inwardly from the lower end portion defining an opening greater than the diameter of the bag and cage assembly but less than the outside diameter of the ring member.

4,251,245

SIDE LOADING FILTER APPARATUS

Kenneth E. Reynolds, Gibsonia, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Dec. 12, 1979, Ser. No. 103,081
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—481 **5 Claims**



1. In combination, a filter chamber provided with a side wall having a row of uniformly spaced openings therethrough, said chamber also having an end wall provided with an access door at the outer end of said row, a track extending from said door along said side wall at the bottom of said openings, filter units insertable through said door and adapted to be mounted on said track, a rod extending lengthwise of the track and having an outer end accessible through the door, means supporting the rod for axial movement by manual manipulation back and forth parallel to said track between inner and outer positions, and a plurality of lugs rigidly mounted on the rod at longitudinally spaced intervals and all projecting in the same direction from the rod, there being as many lugs as said openings with the lugs spaced apart a distance greater than the width of a filter unit, the rod being rotatable to turn said lugs from positions for overlapping engagement with one side of filter units on the track to positions for permitting the lugs to be moved to the opposite side of the filter units, the lugs being located on the rod in positions for moving filter units step by step along the track from alignment with one of said openings to alignment with another opening when the rod is moved back and forth, the outermost lug being located between said door and the outermost of said openings when the rod is in its outer position, whereby to push a filter unit placed on said track beside said outermost opening into a position in alignment with the next opening when the rod is moved to its inner position, and the innermost lug being located between the innermost opening and the inner end of said side wall when the rod is in its inner position.

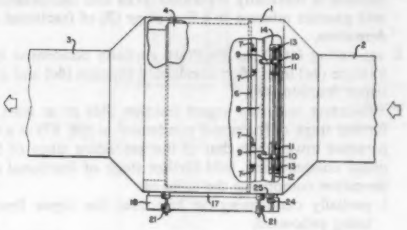
4,251,246

SAFETY DEVICE FOR SIDE LOADING FILTERING APPARATUS

Paul D. Andreychek, Pittsburgh, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jan. 24, 1980, Ser. No. 114,842
Int. Cl.³ B01D *46/00*
U.S. Cl. 55—481 **4 Claims**

1. In side loading filtering apparatus, the combination with a housing having an inlet and having a side wall provided with an outlet opening, the housing having a wall at one end of said side wall provided with an access opening for passage of a filter sideways into and out of the housing, a flange surrounding the access opening and extending outwardly from said end wall, a removable door for the access opening provided with a flange surrounding said first-mentioned flange, means for moving the door toward the housing to close the access opening, a pressure bar inside the housing at the side opposite said side wall and parallel thereto, a manually rotatable shaft in the housing parallel to said bar and provided with a pair of screw threads spaced lengthwise thereof, said shaft extending out through said end wall beside the door and having an outer end for turning the shaft, and means actuated by said threads when the shaft is turned for forcing the bar against a filter aligned with said outlet opening to seal the filter against said side wall around the opening, of a safety device comprising a third screw thread on said shaft outside of said housing, a nut on said



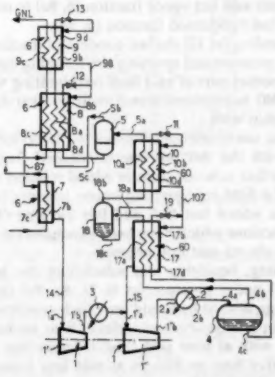
third screw thread for movement toward and away from the housing when the shaft is rotated, and a door stop movable with said nut and projecting between said door flange and housing end wall, the stop being engageable by the door flange whenever a filter is not being pressed tightly against said side wall by the pressure bar to thereby prevent the door from being completely closed, and the stop being moved by said nut away from the door flange toward said end wall when a filter is sealed against said side wall, whereupon the door can be closed tightly.

4,251,247

METHOD AND APPARATUS FOR COOLING A GASEOUS MIXTURE

Joseph J. Gauberthier, and Henri Paradowski, both of Rueil-Malmaison, France, assignors to Compagnie Francaise d'Etudes et de Construction Technip, Rueil-Malmaison, France

Continuation of Ser. No. 941,923, Sep. 13, 1978, abandoned, which is a continuation of Ser. No. 792,801, May 2, 1977, abandoned, which is a continuation of Ser. No. 580,707, May 27, 1975, abandoned. This application Jun. 28, 1979, Ser. No. 53,053
Claims priority, application France, May 31, 1974, 74 19008
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—9 **15 Claims**



1. A method of liquifying and subcooling under pressure a gaseous mixture (NG) by means of a single refrigerating,

closed-loop cycle with a cycle mixture comprising a plurality of components, said cycle mixture being compressed from a low pressure to a high pressure, refrigerated under said high pressure by an external coolant and thereafter expanded down to a lower pressure, wherein said refrigerating cycle comprises the steps of:

a. fractionally condensing under said high pressure and cycle mixture by successively:
   1. partially condensing said cycle mixture, which has been compressed (at 1") to said high pressure, through indirect heat exchange with said external coolant while said cycle mixture is thermally separated from and independent of said gaseous mixture in a first stage (2) of fractional condensation,
   2. separating (at 4) the resulting partially condensed cycle mixture (4*a*) into a first condensed fraction (4*c*) and a first vapor fraction (4*b*),
   3. subjecting said first vapor fraction (4*b*) to at least one further stage of fractional condensation (60; 17) at a temperature lower than that of the preceding stage of fractional condensation, said further stage of fractional condensation comprising the steps of:
      i. partially condensing (at 10*a;* 17*a*) the vapor fraction being processed;
      ii. separating (at 5; 18) the partially condensed fraction (5*a,* 18*a*) into a following condensed fraction (5*c;* 18*c*) and a following vapor fraction (5*b;* 18*b*),
      iii. expanding (at 11; 19) the preceding condensed fraction (4*c*) to a lower pressure which is intermediate said low pressure and said high pressue of said cycle,
      iv. spraying the resulting expanded fraction as at least one part of an intermediate refrigerating vapor stream (60; 10*b,* 17*b*) in counter-current indirect heat exchanging relationship with said preceding condensed fraction (10*a,* 17*a*) to subcool said preceding condensed fraction, thereby forming a reheated intermediate refrigerating vapor stream (15) consisting of those condensed fractions (17*d,* 10*d*) which had been expanded (at 19, 11) to said intermediate pressure and sprayed (at 17*b,* 10*b,* 107), and also consisting of the whole cycle mixture less said last (9*d*) and last but one (5*c*) condensed fractions,
      v. recovering from the last stage of said further stage of fractional condensation (60) and separation (5), a last but one condensed fraction (5*c*) and a last vapor fraction (5*b*),
   4. expanding (at 12) said last but one condensed fraction (5*c*) to said low pressure and spraying the resulting expanded fraction as at least one part of a final refrigerating vapor stream (6; 8*b*) in counter-current indirect heat exchanging relationship with
      i. said last but one condensed fraction (6; 8*d*) to subcool same, and
      ii. with said last vapor fraction (6; 8*a*) to condense same as a last condensed fraction (6; 9*d*),
   5. expanding (at 13) the last condensed fraction (6; 9*d*) to said low pressure and spraying the resulting expanded fraction as another part of said final refrigerating vapor system (6; 9*b,* 98) in counter-current indirect heat exchanging relationship with
      i. said last condensed fraction (6; 9*d*) to subcool same, and
      ii. with the last but one condensed fraction (6; 8*d*) to further subcool same in added relation to said one part of a final refrigerating vapor stream (14) consisting of the added last (9*d*) and last but one (15c9 condensed fractions which have been expanded (at 13, 12), respectively, to said low pressure,
   6. cooling, liquifying and subcooling the gaseous mixture (NG) under pressure (at 6; 7*c,* 8*c,* 9*c*) through heat exchange with at least said last condensed fraction (6; 8*a,* 9*d*) and in counter-current indirect heat exchanging relationship with at least said final refrigerating stream, the respective heat exchanges at said low pressure vaporizing and reheating the respective condensed fractions to form a reheated final refrigerating vapor stream (14);

b. recompressing (at 1') said reheated final refrigerating vapor stream (14) to raise the pressure thereof from said low pressure (1'*a*) to said intermediate pressure (1'*b*); and

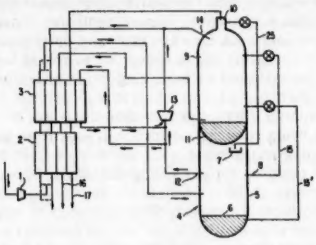
c. combining said final refrigerating vapor stream (14), after its compression to said intermediate pressure (1'*b*), with said reheated intermediate refrigerating vapor stream (15), and recompressing the resulting combined vapor stream (1"*a*) to raise its pressure from said intermediate pressure to said high pressure of cycle.

4,251,248

METHOD AND APPARATUS FOR AUTOMATIC CHANGE OF OPERATIONS IN AIR SEPARATION PLANT

Takeshi Iyoki; Taichi Katsuki; Takumi Mizokawa, and Takaharu Goto, all of Kobe, Japan, assignors to Kobe Steel, Limited, Kobe, Japan

Continuation-in-part of Ser. No. 839,355, Oct. 4, 1977, abandoned. This application May 4, 1979, Ser. No. 36,015
Claims priority, application Japan, Oct. 4, 1976, 51-119534
Int. Cl.³ F25J *3/04*
U.S. Cl. 62—21 **8 Claims**



1. A method for automatically changing operations in an air separation plant for increasing or decreasing the amount of a product obtained therefrom, wherein a ratio of the flow rate of feed air to be introduced into the air separation plant to product is altered, and a change to an intended value of the flow rate of feed air, a change to an intended value of the flow rate of liquid air recycled to an upper tower from a lower tower of a rectification column, a change to an intended value of the flow rate of liquid nitrogen and a change to an intended value of the flow rate of an expansion turbine gas flowing in an expansion turbine are all determined from the value of the increased or decreased amount of the product, which comprises the steps of:

increasing the ratio of feed air to product, for obtaining a desired increase in the amount of product, by first increasing the flow rate of feed air, thereafter increasing the flow rates of liquid air, liquid nitrogen and expansion turbine gas to said intended values, and then increasing the flow rate of the product; and

for a decrease in the flow rate of product, increasing the ratio of feed air to product by first decreasing the flow rate of product, thereafter decreasing the flow rates of liquid air, liquid nitrogen and expansion turbine gas to said intended values, and then decreasing the flow rate of feed air.

4,251,249

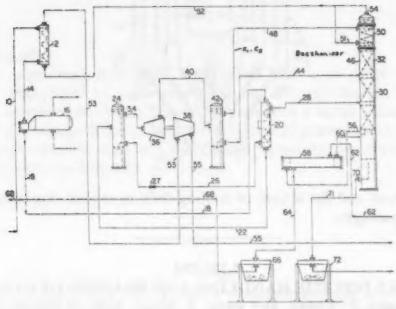
LOW TEMPERATURE PROCESS FOR SEPARATING PROPANE AND HEAVIER HYDROCARBONS FROM A NATURAL GAS STREAM

Jerry G. Gulsby, Humble, Tex., assignor to The Randall Corporation, Houston, Tex.

Continuation of Ser. No. 760,515, Feb. 19, 1977, abandoned. This application Dec. 15, 1978, Ser. No. 969,990

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—28 **8 Claims**



1. A process for low temperature fractionation of dehydrated natural gas to remove propane and heavier hydrocarbon components therefrom and reject methane and ethane, comprising the steps of:

cooling the inlet natural gas to produce a first gas-condensate mixture;

separating the gas phase and the hydrocarbon condensate of said first gas-condensate mixture;

heating the hydrocarbon condensate of the first gas-condensate mixture to effect at least a partial reboil thereof to produce a liquid-vapor stream;

expanding the gas phase of said first gas-condensate mixture through a turbine to produce a second gas-condensate mixture;

separating the gas phase and the hydrocarbon condensate of said second gas-condensate mixture;

flowing the hydrocarbon condensate of said second gas-condensate mixture to a fractionating column;

flowing said liquid-vapor stream to said fractionating column to strip methane and ethane from the hydrocarbon condensate of said second gas-condensate mixture;

flowing the gas phase of said second gas condensate mixture to a reflux condenser inside said fractionating column; and

condensing hydrocarbon components of said inlet gas with said reflux condenser providing the necessary refrigeration for recovering propane as the liquid product and rejecting the ethane.

4,251,250

PROCESS AND APPARATUS FOR THE PRODUCTION OF LIGHT CONDUCTING FIBERS

Hubert Aulich, Munich, and Karl-Heinz Eisenrith, Schliersee, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

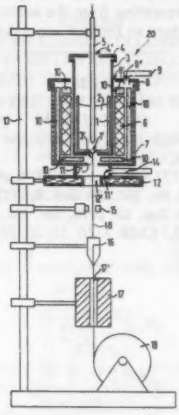
Filed Aug. 20, 1979, Ser. No. 67,959

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842586

Int. Cl.³ C03C *25/02*; C03B *37/02*

U.S. Cl. 65—2 **14 Claims**

1. A process for the production of a light conducting fiber having a low degree of attenuation and a high numerical aperture, said light conducting fiber being a glass fiber having a cladding of optically active synthetic material the process comprising the steps of introducing multi-component glasses into a quartz glass crucible, said glasses having a melting point below the melting point of the crucible, melting the multi-component glasses, homogenizing and refining the melt of multi-component glasses by passing a gas through the glass melt in the quartz crucible, drawing a glass fiber through an opening in a base of the quartz crucible, during the drawing of the glass



fiber providing a protective gas atmosphere surrounding the drawn glass fiber, cooling the fibers while in said atmosphere, and then coating the cooled, drawn fiber with an optically active synthetic material to produce the cladding of optically active material.

4,251,251

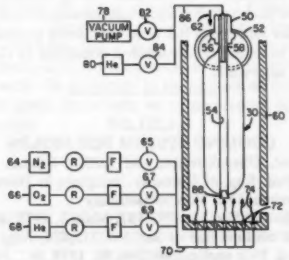
METHOD OF MAKING OPTICAL DEVICES

Michael G. Blankenship, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 922,559, Jul. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 808,862, Jun. 22, 1977, abandoned. This application May 31, 1979, Ser. No. 44,192

Int. Cl.³ C03B *37/00*; C03C *25/02*

U.S. Cl. 65—3 A **16 Claims**



1. A method of forming a high purity glass article comprising the steps of

providing a substantially cylindrical mandrel,

applying a first coating of glass soot to the outside peripheral surface of said mandrel,

applying a second coating of glass soot over the outside peripheral surface of said first coating, the glass soot of said second coating having a refractive index less than that of the glass soot of the first coating,

removing said mandrel to form a soot preform having an aperture therein,

heating said preform to a sufficiently high temperature for a

sufficient period of time to permit said first and second soot coatings to simultaneously consolidate and permit said aperture to close, the viscosities V_1 and V_2 of said first and second coatings of glass soot, respectively, at said consolidation temperature being such that the ratio V_1/V_2 is less than $\frac{1}{2}$ but is large enough to prevent the first coating from separating from the second coating, and forming the structure so formed into a desired glass article.

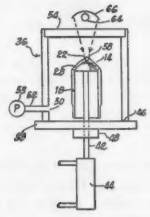
4,251,252
METHOD FOR MAKING VACUUM INSULATED CONTAINER

Albert A. Frazier, Nashville, Tenn., assignor to Aladdin Industries, Incorporated, Chicago, Ill.

Division of Ser. No. 522,445, Nov. 11, 1974, abandoned, which is a continuation of Ser. No. 261,424, Jun. 9, 1972, abandoned. This application Jun. 23, 1978, Ser. No. 918,589

Int. Cl.³ C03B *5/16, 23/20, 23/24*

U.S. Cl. 65—34 **3 Claims**



1. A method of making vacuum insulated containers comprising the steps of:

forming an opening in a first container wall having a bottom, a side and an open top;

placing the first container wall joined at its open top end to the open top end of a second container wall spaced throughout most of its length from said first container wall to provide a space therebetween and a preformed sealing element in said opening in a chamber;

evacuating the air from the chamber and from the space between said walls; and

utilizing pressure to deform said sealing element against the sides of said opening while said container is in said chamber after said space has been evacuated to close the opening to maintain the evacuated condition of the space between said walls.

4,251,253
COOLING SYSTEM FOR MOLDS

Kurt Becker, Obernkirchen, and Lothar Schaar, Heuerssen, both of Fed. Rep. of Germany, assignors to Hermann Heye, Obernkirchen, Fed. Rep. of Germany

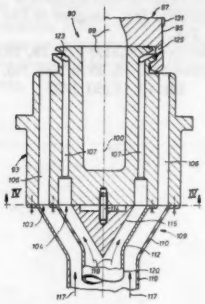
Continuation of Ser. No. 883,137, Mar. 3, 1978, abandoned, which is a continuation of Ser. No. 715,434, Aug. 18, 1976, abandoned. This application Oct. 30, 1979, Ser. No. 89,903

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1975, 2537037

Int. Cl.³ C03B *9/38*

U.S. Cl. 65—267 **12 Claims**

1. A mold arrangement for molding thermoplastic materials, comprising an elongated mold including a wall which defines an elongated mold cavity having a longitudinal axis; a plurality of cooling passages each extending lengthwise of said longitudinal axis and each being located over its entire length in various positions in said wall and intersecting a plane extending perpendicular to said longitudinal axis; at least two supply means each feeding at least one stream of cooling fluid through at least one of two different ones of said cooling passages to effect heat exchange between said wall and said cooling fluid; and means for regulating the degree of heat exchange between



said wall and the stream of cooling fluid in at least one of said two passages.

4,251,254
TOOLS FOR THE HANDLING AND SHAPING OF GLASS

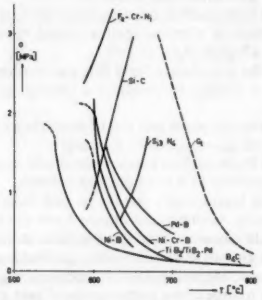
Johannes T. Klomp, and Peter J. Vrugt, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1979, Ser. No. 38,021

Claims priority, application Netherlands, May 18, 1978, 7805366

Int. Cl.³ C03B *40/02*

U.S. Cl. 65—374 R **3 Claims**



1. A glass working tool for the handling and shaping of glass at low viscosities, said tool containing at least in its surface layer a boron-containing material selected from the group consisting of titanium boride and boron carbide, said boron-containing material capable, upon oxidation, of forming a layer of boron trioxide at the surface of said tool.

4,251,255
AGROCHEMICAL AGENTS AND THEIR USE

Kuno Wagner; Johanness Niggemann, both of Leverkusen; Kurt Findeisen, Odenthal, and Hans Scheinpflug, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 12, 1979, Ser. No. 11,541

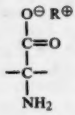
Claims priority, application Fed. Rep. of Germany, Feb. 14, 1978, 2806097

Int. Cl.³ C05C *11/00*

U.S. Cl. 71—27 **29 Claims**

1. A method of supplying plants with nutrients which comprises applying to the plants or a plant habitat a composition

comprising as active ingredient an effective amount of a substance which is a modified azulmic acid, stabilized by condensation with a carbonyl compound, said azulmic acid prior to condensation containing from 0.5 to 55% by weight of ionic groups of the general formula



in which

R represents hydrogen, ammonium, one equivalent of a protonated or quaternized organic nitrogen base or of a sulphonium cation or one equivalent of a metal cation,

and containing from 0.5 to 15% by weight of groups formed by decarboxylation reactions, said groups formed by decarboxylation reactions being of the formula

or an acid addition salt of such a stabilized azulmic acid or a complex compound of such a stabilized azulmic acid.

4,251,256

HERBICIDAL N-SUBSTITUTED ETHYLENE DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE

Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Dec. 22, 1978, Ser. No. 972,546
Int. Cl.³ A01N *57/12*; C07F *9/40*
U.S. Cl. 71—86 **9 Claims**

1. A compound selected from (a) the monosodium salt of ethyl N-(2-cyanoethyl)-N-phenoxyphosphonomethylglycinate and (b) the disodium salt of methyl N-carboxymethyl-N-phosphonomethyl-β-alaninate.

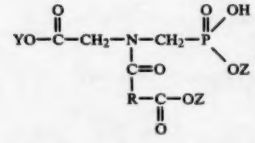
4,251,257

HERBICIDAL METHODS EMPLOYING DERIVATIVES OF N-PHOSPHONOMETHYLGLYCINE

Van R. Gaertner, Ballwin, Mo., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 682,243, May 3, 1976, Pat. No. 4,197,254. This application Aug. 17, 1979, Ser. No. 67,252
Int. Cl.³ A01N *57/12, 57/14, 57/16*
U.S. Cl. 71—86 **13 Claims**

1. A herbicidal method which comprises contacting a plant with a herbicidally effective amount of a compound of the formula



wherein Y is selected from hydrogen, lower alkyl and alkali metal, each Z is selected from hydrogen an alkali metal, and R is selected from vinylene, methylvinylene, alkylene having a chain length of 2 to 3 carbon atoms between the free valences and a total of up to 8 carbon atoms, the monochloro derivatives of such vinylene and alkylene, phenylene, carboxyphenylene, 3-nitrophenylene, tolylene, cyclohexenylene, methylcyclohexenylene, cycloalkylene of 4 to 6 carbon atoms, dicarboxycycloalkylene of 4 to 6 ring carbon atoms, dicarboxybenzoylphenylene, nobornenylene, norbornylidene, N-methylpyrrolylidine, pyridylidene, picolylidene and thienylidene, provided that the free valences on the cyclic radicals must be in ortho relationship with respect to the ring carbon atoms.

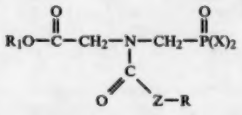
4,251,258

N-(SUBSTITUTED CARBONYL) DERIVATIVES OF N-PHOSPHINYLMETHYLGLYCINATES AND THE HERBICIDAL USE THEREOF

Robert J. Kaufman, University City, Mo., assignor to Monsanto Company, St. Louis, Mo.

Filed Sep. 29, 1978, Ser. No. 947,134
Int. Cl.³ A01N *57/12*; C07F *9/40*
U.S. Cl. 71—87 **15 Claims**

1. A compound of the formula



wherein R is selected from the group consisting of lower alkyl, lower alkenyl, lower alkynyl or benzyl; R_1 is selected from the group consisting of lower alkyl or lower alkoxyalkyl; Z is sulfonyl; and X is R_2, wherein R_2 is phenoxy or phenoxy substituted with up to three groups individually selected from the class consisting of lower alkyl, lower alkoxy, halogen and nitro.

4,251,259

SYNERGISTIC COMPOSITIONS OF FUSICOCCYN AND HERBICIDES

Ciro Prezioso, Milan; Marco Radice, Corsico; Giorgio Siddi, S. Donato Milanese, and Ernesto Signorini, Mainate, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Nov. 8, 1978, Ser. No. 958,616
Claims priority, application Italy, Nov. 10, 1977, 29530 A/77
Int. Cl.³ A01N *43/16*
U.S. Cl. 71—88 **8 Claims**

1. The method of boosting the activity of at least one herbicide selected from the group consisting of 1,1'-dimethyl-4,4'-dipyridilium chloride, 2-chloro-6-ethylamino-4-isopropylamino-1,3,5-triazine, and 3-(3,4-dichlorophenyl)-1-methoxy-1-methylurea, which consists in mixing the glucoside, fusicoccyn, with the herbicide in an amount of from one-fifteenth of the herbicide weight up to an amount equal to the herbicide weight.

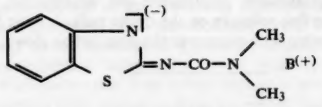
4,251,260

2-(DIMETHYLCARBAMOYLIMINO)-BENZTHIAZOLINE-3-ID-SALTS, USED IN SELECTIVE WEED CONTROL

Ludwig Nüsslein, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering AG, Berlin and Bergkamen, Fed. Rep. of Germany

Continuation of Ser. No. 799,324, May 23, 1977, abandoned. This application Jul. 28, 1978, Ser. No. 928,883
Claims priority, application Fed. Rep. of Germany, May 31, 1976, 2624823
Int. Cl.³ A01N *43/78*
U.S. Cl. 71—90 **4 Claims**

1. A method of controlling weed growth in cereal crops, comprising treating said crops with a composition comprising between about 10 and 80 weight-% of a compound of the formula



wherein $B^{(+)}$ is an alkali metal cation as active agent, and about 90 to 20 weight-% carrier material at a rate of between about 1 and 5 kg active agent/ha.

4,251,261

2-CHLORO-4-TRIFLUOROMETHYL-5-THIAZOLECARBOXYLIC ACIDS AND DERIVATIVES

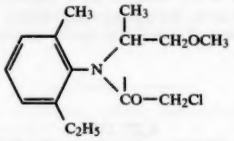
Robert K. Howe, Bridgeton, and Len F. Lee, Maryland Heights, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 906,183, May 15, 1978, Pat. No. 4,199,506. This application Apr. 9, 1979, Ser. No. 27,963

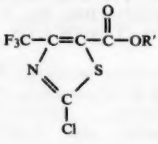
Int. Cl.³ A01N *43/78, 37/18*

U.S. Cl. 71—90 **6 Claims**

1. A method for selectively preventing the growth of weeds in the presence of sorghum plants with comprises applying to the sorghum plant locus a herbicidally effective amount of 2-chloro-N-(2-methoxy-1-methylethyl)-6'-ethyl-o-acetotoluidide having the formula



said sorghum plants having been germinated from seeds treated with a safening effective amount of a compound of the formula



wherein R' is selected from the group consisting of alkyl having up to 10 carbon atoms and benzyl.

4,251,262

1-CARBAMOYL-1,2,4-TRIAZOLE HERBICIDAL AGENTS

Robert F. Brookes, Tollerton; David H. Godson, Chilwell; Douglas Greenwood, Nottingham; Margaret Tulley, Mapperley, and Stanley B. Wakerley, Burton Joyce, all of England, assignors to The Boots Company Limited, Nottingham, England

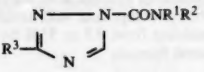
Division of Ser. No. 849,367, Nov. 7, 1977, Pat. No. 4,148,626, which is a division of Ser. No. 603,572, Aug. 11, 1975, Pat. No. 4,087,269, which is a division of Ser. No. 317,453, Dec. 21, 1972, Pat. No. 3,952,001, which is a continuation-in-part of Ser. No. 261,206, Jun. 9, 1972, abandoned, which is a continuation-in-part of Ser. No. 153,446, Jun. 15, 1971, abandoned. This application Mar. 12, 1979, Ser. No. 19,671

Claims priority, application United Kingdom, Jul. 1, 1970, 31922/70; Mar. 31, 1971, 8275/71; Dec. 31, 1971, 61022/71; Dec. 31, 1971, 61023/71

Int. Cl.³ A01N *47/38;* C07D *249/12*

U.S. Cl. 71—92 **16 Claims**

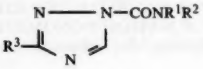
1. A compound of the general formula



in which R^3 is alkylsulphonyl containing 1–5 carbon atoms, alkenyloxyalkylthio containing 4–6 carbon atoms, alkoxyalkylsulphinyl containing 2–6 carbon atoms, alkoxyalkylsulphonyl containing 2–6 carbon atoms, haloalkylsulphinyl containing 2–5 carbon atoms or haloalkylsulphonyl containing 1–5 carbon atoms, R^1 is alkyl containing 2–6 carbon atoms, allyl, 2-methylallyl, alkoxyalkyl containing 2–6 carbon atoms, alkenyloxyalkyl containing 4–6 carbon atoms, haloalkyl containing 2–6 carbon atoms, 2-haloallyl or 2,3-dihaloallyl, and R^2 is alkyl containing 2–3 carbon atoms, allyl, 2-methylallyl, prop-2-ynyl, alkoxyalkyl containing 2–4 carbon atoms, haloalkyl containing 2–3 carbon atoms, 2,3-dihaloallyl or cyclopropyl, provided that R^2 is cyclopropyl or that at least one of the groups R^1, R^2 and R^3 contains an alkoxy substituent or one or two halo substituents.

10. A herbicidal composition which comprises as an active ingredient a herbicidally effective amount of a triazole of the general formula defined in claim **1** in association with a diluent or carrier.

12. A method for the pre-weed emergence control of graminaceous weeds which comprises applying to the locus of the weeds a herbicidally effective amount of a triazole of the general formula



in which R^3 is alkylsulphonyl containing 1–5 carbon atoms, alkenyloxyalkylthio containing 4–6 carbon atoms, alkoxyalkylsulphinyl containing 2–6 carbon atoms, alkoxyalkylsulphonyl containing 2–6 carbon atoms, haloalkylsulphinyl containing 2–5 carbon atoms or haloalkylsulphonyl containing 1–5 carbon atoms, R^1 is alkyl containing 2–6 carbon atoms, allyl, 2-methylallyl, alkoxyalkyl containing 2–6 carbon atoms, alkenyloxyalkyl containing 4–6 carbon atoms, haloalkyl containing 2–6 carbon atoms, 2-haloallyl or 2,3-dihaloallyl, and R^2 is alkyl containing 2–3 carbon atoms, allyl, 2-methylallyl, prop-2-ynyl, alkoxyalkyl containing 2–4 carbon atoms, haloalkyl containing 2–3 carbon atoms, 2,3-dihaloallyl or cyclopropyl, provided that R^2 is cyclopropyl or that at least one of the groups R^1, R^2 and R^3 contains an alkoxy substituent or one or two halo substituents.

4,251,263

N-SUBSTITUTED, 2-PHENOXYNICOTINAMIDE COMPOUNDS AND THE HERBICIDAL USE THEREOF

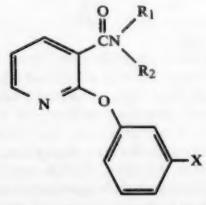
Arnold D. Gutman, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 4, 1979, Ser. No. 72,387

Int. Cl.³ A01N *43/40;* C07D *213/56*

U.S. Cl. 71—94 **24 Claims**

1. A compound having the formula



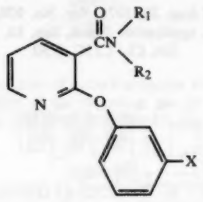
in which X is chloro, bromo, trifluoromethyl, methyl or ethyl; R_1 is hydrogen or C_3–C_5 alkenyl and R_2 is:

(a) C_3–C_5 alkenyl if R_1 is C_3–C_5 alkenyl;

(b) C_3–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is chloro, methyl, ethyl, or trifluoromethyl and R_1 is hydrogen; and

(c) C_1–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is bromo and R_1 is hydrogen.

19. A method of controlling undesirable vegetation comprising applying to the vegetation or the locus thereof a herbicidally effective amount of a compound having the formula



in which X is chloro, bromo, trifluoromethyl, methyl or ethyl; R_1 is hydrogen or C_3–C_5 alkenyl and R_2 is:

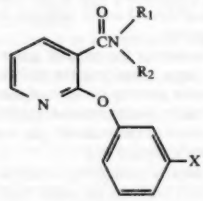
(a) C_3–C_5 alkenyl if R_1 is C_3–C_5 alkenyl;

(b) C_3–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is chloro, methyl, ethyl or trifluoromethyl and R_1 is hydrogen; and

(c) C_1–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is bromo and R_1 is hydrogen.

24. A herbicidal composition of matter comprising:

(i) A herbicidally effective amount of a compound having the formula



in which X is chloro, bromo, trifluoromethyl, methyl or ethyl; R_1 is hydrogen or C_3–C_5 alkenyl and R_2 is:

(a) C_3–C_5 alkenyl if R_1 is C_3–C_5 alkenyl;

(b) C_3–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is chloro, methyl, ethyl or trifluoromethyl and R_1 is hydrogen; and

(c) C_1–C_5 alkyl, C_3–C_5 alkenyl or C_3–C_6 alkynyl if X is bromo and R_1 is hydrogen, and

(ii) a herbicidally suitable inert carrier or diluent.

4,251,264
2,6-DINITROANILINE HERBICIDES

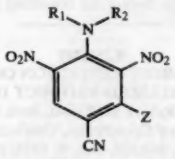
Albert W. Lutz, Princeton, and Robert E. Diehl, Lawrenceville, both of N.J., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 777,271, Mar. 11, 1977, Pat. No. 4,165,231, which is a continuation-in-part of Ser. No. 639,729, Dec. 11, 1975, abandoned, which is a division of Ser. No. 538,980, Jan. 6, 1975, Pat. No. 4,066,441, which is a division of Ser. No. 323,000, Jan. 12, 1973, Pat. No. 3,920,742, which is a continuation-in-part of Ser. No. 262,807, Jun. 14, 1972, abandoned, which is a continuation-in-part of Ser. No. 174,938, Aug. 25, 1971, abandoned. This application Jan. 8, 1979, Ser. No. 1,624

Int. Cl.³ A01N *37/34*

U.S. Cl. 71—105 **7 Claims**

1. A method for the preemergence control of undesirable plant species comprising applying to soil containing seeds of the undesirable plant species a herbicidally effective amount of a compound of the formula:



wherein:

Z is alkyl C_1-C_4, alkenyl C_2-C_4 or monosubstituted alkyl C_1-C_4 where the substituent is halogen, alkoxy C_1-C_4 or $—NR_3R_4$;

R_1 is hydrogen, alkyl C_1-C_6, alkenyl C_2-C_6 or alkynyl C_2-C_6;

R_2 is alkyl C_2-C_7 (straight, branched or cyclo), alkenyl C_2-C_6, alkynyl C_2-C_6, or monosubstituted alkyl C_1-C_4 where the substituent is halogen or alkoxy C_1-C_4; and

R_3 and R_4 each represent hydrogen or alkyl C_1-C_4.

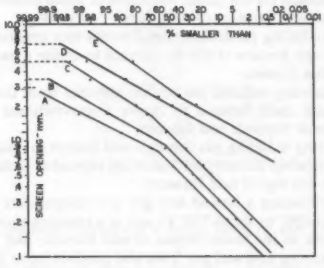
4,251,265
CLAY PREPARATION

Claud L. Stratton, and James F. Kane, both of Benton, Ark., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 27, 1979, Ser. No. 61,300

Int. Cl.³ C22B *1/24*

U.S. Cl. 75—3 **4 Claims**



1. A process for pelletizing clay containing aluminous ore comprising the steps of:

a. crushing the clay to within an appropriate size range;

b. blending the crushed clay with water to achieve a moisture content of between about 17.5 and about 22 percent by weight water;

c. pelletizing the clay in a suitable apparatus to provide clay pellets of predetermined size;

d. surface hardening the pellets; and

e. drying and calcining the pellets at a temperature within the range of from about 1100° to about 1500° F.

4,251,266
METHOD FOR TAKING CARE OF METALLIC WASTE PRODUCTS BY REMELTING

Owe G. T. Larsson, Ekshärad; Rune H. Lindström, and Bo L. L. Jonsson, both of Hagfors, all of Sweden, assignors to Uddeholms Aktiebolag, Hagfors, Sweden

Filed Sep. 11, 1979, Ser. No. 74,311

Claims priority, application Sweden, Oct. 25, 1978, 7811104

Int. Cl.³ C21C *5/52*

U.S. Cl. 75—10 R **10 Claims**

1. In a method of remelting metallic waste products containing significant amounts of at least one of the metals belonging to groups Va and VIa of the periodic table, to recover the

waste products in a remelted form the improvement comprising remelting the waste products by feeding them into a molten metallic charge in an inductively heated furnace having a non-nitrogenous inert gas fed into the furnace room above the surface of the charge during the remelting process.

4,251,267

METHOD FOR DIRECT REDUCTION OF METAL OXIDE TO A HOT METALLIZED PRODUCT IN SOLID FORM

Donald Beggs, and Robert M. Escott, both of Charlotte, N.C., assignors to Midrex Corporation, Charlotte, N.C.

Division of Ser. No. 940,806, Sep. 8, 1978, Pat. No. 4,188,022.
This application Aug. 24, 1979, Ser. No. 69,408
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—35 **12 Claims**

1. A method for the direct reduction of metal oxides to a hot metallized iron product in solid form, comprising:

(a) introducing particulate metal oxides to a generally vertical shaft furnace at the top thereof to create a packed bed burden therein;

(b) removing reduced particulate material from the bottom of said shaft furnace to create a gravitational flow of material through said furnace;

(c) passing reducing gas through said burden in counterflow relationship thereto and removing expended reducing gas from the top of said furnace;

(d) introducing a heated seal gas at a temperature of from about 650° to about 750° C. and at a pressure above atmospheric to the lower region of said furnace; and

(e) removing said seal gas from said product upon discharge from said furnace.

4,251,268

METHOD OF TREATING BORON-CONTAINING STEEL

Fritz Willim, Birmensdorf, Switzerland, assignor to Concast AG, Zürich, Switzerland

Filed Nov. 8, 1979, Ser. No. 92,344
Claims priority, application Switzerland, Nov. 17, 1978, 11811/78
Int. Cl.³ C21C *7/00*
U.S. Cl. 75—58 **6 Claims**

1. A method of treating boron-containing steel for continuous casting small sectional shapes with unregulated nozzle, comprising the steps of:

pre-deoxidizing steel with at least one element selected from the group consisting essentially of manganese, silicon and aluminium;

adding to the steel melt by means of a carrier gas an element selected from the group consisting of calcium and boron or compounds of calcium and boron;

said last-mentioned step embodying adding to the steel melt in the ladle prior to casting into a continuous casting mold in powder form and by means of the inert carrier gas calcium or a compound thereof, at least one element forming a stable nitride at the steel melt temperature, and boron or a boron compound; and

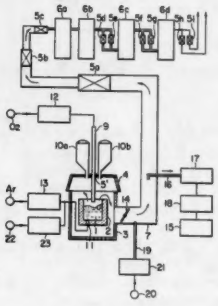
protecting the casting jet moving between the ladle and the tundish and the tundish and the continuous casting mold from contact with the surrounding air.

4,251,269

METHOD FOR CONTROLLING STEEL MAKING PROCESS UNDER REDUCED PRESSURES

Fumio Hoshi; Yuzo Saita, both of Tokuyama, and Akira Fujisawa, Kyoto, all of Japan, assignors to Nisshin Steel Co., Ltd., Japan

Filed Aug. 30, 1978, Ser. No. 938,013
Claims priority, application Japan, Sep. 10, 1977, 52-109247
Int. Cl.³ C21C *5/30*
U.S. Cl. 75—60 **11 Claims**



1. A method of determining rate of decarburization of molten steel being decarburized under reduced atmospheric pressures, which comprises;

continuously evacuating the exhaust gases of decarburization from the zone containing the molten steel;

forming an intimate gaseous mixture of the decarburization exhaust gases and a predetermined quantity of a reference gas which is inert to the exhaust gas; said exhaust gases comprising CO, CO_2 and N_2;

mass spectrometrically monitoring a sample of said mixture for the ionization currents for peaks with which the CO, CO_2, N_2 and reference gas in said sample are associated; and

determining the rate of decarburization from a comparison of the quantity of the reference gas in said mixture and the values of the ionization currents for the peaks.

4,251,270

METHOD OF CONTROLLING STEEL MAKING PROCESS UNDER ATMOSPHERIC PRESSURE

Fumio Hoshi; Yuzo Saita, both of Tokuyama, and Akira Fujisawa, Kyoto, all of Japan, assignors to Nisshin Steel Co., Ltd., Japan

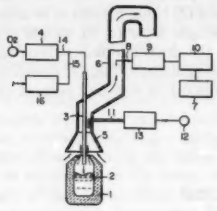
Filed Aug. 30, 1978, Ser. No. 938,014
Claims priority, application Japan, Sep. 10, 1977, 52-109246
Int. Cl.³ C21C *5/30*
U.S. Cl. 75—60 **10 Claims**

1. A method of determining the rate of decarburization of molten steel being decarburized, which comprises;

forming an intimate gaseous mixture of the decarburization exhaust gases and a predetermined quantity of a reference gas which is inert to the exhaust gas, said exhaust gases comprising CO, CO_2 and N_2;

mass spectrometrically monitoring a sample of said mixture for the ionization currents for peaks with which the CO,

CO_2, N_2 and reference gas in said sample are associated; and



determining the rate of decarburization from a comparison of the quantity of the reference gas in said mixture and values of the ionization currents for the peaks.

4,251,271

SUBMERGED INJECTION OF GAS INTO LIQUID-PYROMETALLURGICAL BATH

John M. Floyd, Glen Waverley, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australia

Filed May 1, 1978, Ser. No. 901,513

Claims priority, application Australia, May 9, 1977, PD0041

Int. Cl.³ C22B *15/00, 25/00*

U.S. Cl. 75—73 **8 Claims**

1. A method of injection fluid into a liquid pyrometallurgical bath comprising slag or having a slag on its surface, said method comprising the steps of:

(a) passing said fluid through a lance having an interior duct for flow therethrough of said fluid which acts as the sole coolant for the lance, and a discharge end at which the said gas is discharged,

(b) lowering said lance to a position at which the discharge end of the lance is adjacent to the surface of the slag whereby said fluid being discharged from said lance causes splashing of said slag,

(c) holding said lance in said position whereby splashes of slag deposit on the outer wall of the lance,

(d) maintaining a sufficient turbulent subsonic flow unparted by swirling motion of said fluid through said lance to cool said lance to thereby solidify said splashes of slag deposited on said lance to form a protective coating of solid slag, and

(e) inserting the discharge end of the thus coated lance into the pyrometallurgical bath.

4,251,272

OXIDATION RESISTANT POROUS ABRADABLE SEAL MEMBER FOR HIGH TEMPERATURE SERVICE

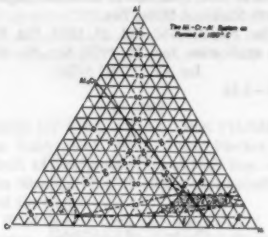
Raymond V. Sara, North Olmstead, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 922,521, Jul. 7, 1978, Pat. No. 4,155,755, which is a continuation of Ser. No. 835,240, Sep. 21, 1977, abandoned. This application Dec. 26, 1978, Ser. No. 973,437

Int. Cl.² B22F *5/00*

U.S. Cl. 75—200 **10 Claims**

1. Method of rendering a porous, abradable sintered metal structure comprising a base alloy of chromium with nickel or cobalt sufficiently oxidation resistant to be used at temperatures up to about 1050° C. without substantial loss of strength, porosity or abradability which comprises introducing into said porous sintered metal structure at least one powdered intermetallic compound of aluminum and an element selected from the group consisting of chromium, titanium, cobalt and nickel, the particles of said intermetallic compound powder being substantially smaller than the average pore size of said porous sintered metal structure, heating said metal structure to a temperature sufficient to cause said intermetallic compound to react with said base alloy to form a structure alloy of aluminum



and chromium with at least one metal selected from the group consisting of nickel, cobalt and titanium, which structure alloy is substantially all beta and gamma phases.

4,251,273

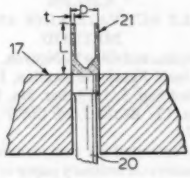
METHOD OF FORMING VALVE LIFTERS

David T. Smith, 2619 W. Pratt Ave., Chicago, Ill. 60645, and Harold R. Biehl, 10 Edward Ave., Lehigh Acres, Fla. 33936

Filed Mar. 2, 1979, Ser. No. 17,021

Int. Cl.³ B22F *5/00*

U.S. Cl. 75—200 **9 Claims**



1. The method of making a valve lifter or the like which comprises:

blending elemental iron powder of −100 mesh size with smaller size powder particles of sources of manganese, molybdenum and nickel,

pressing the resulting mixture into a coherent preform,

sintering said preform to cause solid state diffusion and alloying within said preform, and

pressing the sintered preform to an elongated shape having a large length to wall thickness ratio, said shape having substantially theoretical, uniform density at ambient temperatures.

4,251,274

METAL POWDER COMPOSITION

Michael Koehler, Wetter, and Wolfgang Petry, Bochum, both of Fed. Rep. of Germany, assignors to Bleistahl G.m.b.H., Wetter, Fed. Rep. of Germany

Filed Jun. 18, 1979, Ser. No. 49,763

Int. Cl.³ B22F *1/00*

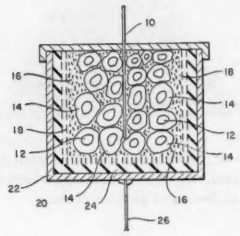
U.S. Cl. 75—252 **8 Claims**

1. A powder composition for compressing and sintering to produce a high wear-resistant article, said powder composition essentially including between 2% and 10% by weight basalt powder, and the remainder being metallurgical powder.

4,251,275
LOW-VISCOSITY, HIGH-SILVER, PAINT

Robert J. Deffeyes, Arlington, and Harris W. Armstrong, Fort Worth, both of Tex., assignors to Graham Magnetics Incorporated, North Richland Hills, Tex.

Division of Ser. No. 819,362, Jul. 27, 1977, Pat. No. 4,160,284. This application Jun. 18, 1979, Ser. No. 49,312
Int. Cl.³ C23C *3/00*
U.S. Cl. 106—1.14 **3 Claims**



1. In a silver paint, suitable for use in impregnation of porous bodies comprising a liquid vehicle and particulate silver; the improvement comprising at least 40% by weight of particulate silver having an average diameter of from 0.1 to 0.5 microns and formed by thermal decomposition of a carboxylic acid salt of silver, said paint having a maximum viscosity of about 300 cps.

4,251,276
THERMALLY ACTIVATED INK AND TRANSFER METHOD

William I. Ferree, Jr., and Giao V. Nguyen, both of Dallas, Tex., assignors to Liquid Paper Corporation, Dallas, Tex.

Filed Sep. 5, 1979, Ser. No. 72,691
Int. Cl.³ B41M *5/26*; C09D *11/10*
U.S. Cl. 106—27 **41 Claims**

1. A thermally activated ink composition for use in generating printed characters on ordinary paper with a thermal printer comprising:

(a) a thermally stable polymer having a molecular weight of from about 1,000 to about 10,000 and a softening point of from about 50° C. to about 125° C. selected from the group consisting of styrene-allyl alcohol copolymers and polyamide resins and present in an amount of from about 25% to about 45% by weight of the total nonvolatile ink components;

(b) an oil-gelling agent having a melting point of from about 40° C. to about 100° C., being further characterized as a carboxylic acid having eleven to eighteen carbon atoms and 1 to 2 hydroxy groups, said gelling agent being present in an amount of from about 6% to about 13% by weight of the total ink nonvolatile components; and

(c) an oil that is a dissolving medium for said polymer and said gelling agent, and present in an amount of from about 12% to about 26% by weight of the total nonvolatile components.

4,251,277
COMPOSITIONS CONTAINING THIOFUNCTIONAL POLYSILOXANES

Eugene R. Martin, Onsted, Mich., assignor to SWS Silicones Corporation, Adrian, Mich.

Continuation-in-part of Ser. No. 644,404, Dec. 29, 1975, abandoned. This application Apr. 24, 1978, Ser. No. 899,195
Int. Cl.³ B28B *7/36*
U.S. Cl. 106—38.22 **15 Claims**

1. A composition containing (1) an organopolysiloxane which is free of aliphatic unsaturation and has from 1.75 to 2.25 organic radicals per silicon atom and (2) a thiofunctional polysiloxane fluid having at least one mercaptan group per molecule, said organopolysiloxane (1) being present in an amount of from 10 to 99.9 percent by weight and said thiofunctional polysiloxane fluid (2) being present in an amount of from 90 to 0.1 percent by weight based on the weight of the organopolysiloxane (1) and the thiofunctional polysiloxane fluid (2), said thiofunctional polysiloxane fluid (2) contains siloxane copolymers having from 0.1 to 99.9 mol percent of units of the formula

$$M_h \overset{R_g}{\overset{|}{SiO}}_{\frac{4-(h+g)}{2}}$$

and from 99.9 to 0.1 mol percent of at least one other siloxane unit having the general formula

$$R_f SiO_{\frac{4-f}{2}}$$

wherein R is selected from the group consisting of a monovalent hydrocarbon radical and a halogenated monovalent hydrocarbon radical, each having from 1 to 18 carbon atoms, M is a mercaptan containing radical of the formula $R'(SR'''')_y$, R' is selected from the group consisting of a substituted and unsubstituted divalent, trivalent and tetravalent hydrocarbon radical, a hydrocarbon ether, a hydrocarbon thioether, a hydrocarbon ester and a hydrocarbon thioester in which R' is attached to a silicon atom via a silicon-carbon-bond, R''' is selected from the group consisting of hydrogen, a monovalent hydrocarbon radical and a radical represented by the formula R''''X, wherein X is a radical selected from the group consisting of

$$\overset{O}{\overset{\|}{HC}}-\ ,\ O\overset{O}{\overset{\|}{C}}R,$$

OH and a cyanoalkyl radical, R'''' is a divalent hydrocarbon radical free of aliphatic unsaturation having from 1 to 18 carbon atoms, and at least one R''' is hydrogen, f is 0, 1 or 2, g is 0, 1 or 2, h is 1, 2 or 3, and y is a number of from 1 to 3.

4,251,278
PHOTOCHROMIC GLASSES WHICH DARKEN TO A BROWN HUE

George B. Hares, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Jan. 21, 1980, Ser. No. 113,797
Int. Cl.³ C03C *3/04, 3/26*
U.S. Cl. 106—47 Q **7 Claims**

1. A transparent photochromic glass containing about 1–10 ppm palladium and/or gold which is essentially colorless in the undarkened state, but which exhibits a warm brown coloration in the darkened state, wherein crystals of at least one silver halide selected from the group of silver chloride, silver bromide, and silver iodide impart the photochromic behavior to the glass.

4,251,279
METHOD OF PRODUCING ALUMINA-CONTAINING FIBER AND COMPOSITION THEREFOR

Wendell G. Ekdahl, Larkspur, Colo., assignor to Johns-Manville Corporation, Denver, Colo.

Filed Mar. 5, 1979, Ser. No. 17,508
Int. Cl.³ C03C *13/00*; C04B *35/10*
U.S. Cl. 106—50 **21 Claims**

1. In a process for the production of alumina-containing fibers which comprises fiberizing a molten composition comprising an alumina component, the improvement wherein said

alumina component has a surface area on the order of at least about 40 m^2/g and comprises at least 50% by weight of essentially anhydrous alumina containing 5% to 60% by weight of alpha crystalline phase and 40% to 95% by weight of at least one other crystalline phase of alumina.

10. In a composition useful for the production of inorganic fibers from a mixture of molten oxides, which composition comprises a mixture containing at least a silica component and an alumina component, the improvement which comprises:

(a) said alumina component having a surface area on the order of at least about 40 m^2/g and being present in said composition in an amount in the range of from 10% to 80% by weight of said composition; and

(b) said alumina component comprising at least 50% by weight thereof of essentially anhydrous alumina having an alpha crystalline phase content in the range of from 5% to 60% by weight and 40% to 95% by weight of at least one other crystalline phase of alumina.

4,251,280
PROCESS FOR HANDLING AND UTILIZING SYSTEM GAS IN A PYRO-PROCESSING SYSTEM

Glenn A. Heian, Franklin, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 21, 1979, Ser. No. 41,233
Int. Cl.³ C04B 7/44
U.S. Cl. 106—100 **11 Claims**

1. A process for treating wet agglomerate cement material in a pyro-processing material treating system having a traveling grate enclosed by structure defining at least a material up-draft drying zone, a material down-draft drying zone, and a material preheat zone, and there also being provided a kiln for final heating material, and a cooler, said zones, the kiln and the cooler being connected together in series flow arrangement to define a material flow stream from the up-draft drying zone through the down-drying zone and hence through the preheat zone and through the kiln to the cooler with means defining a passage for the counterflow of gas from the cooler to the kiln and from the kiln to the preheat zone comprising the steps of:

elevating the temperature of a first portion of off-gas from the preheat zone having unburned combustibles by combusting the unburned combustibles therein;

passing the temperature elevated preheat off-gas back to the preheat zone as process heat;

combusting a second portion of the preheat off-gas from the preheat zone to burn the unburned combustibles therein;

combining the heated gas from the combusted combustibles of the second portion of the preheat off-gas with the kiln off-gas;

quenching the combined combusted second portion of the preheat off-gas and the kiln off-gas to modify the temperature thereof;

passing the combined quenched gas to the drying zone for use as drying heat;

cleansing the off-gas from the drying zone to remove substantially all of the dust from the gas stream prior to venting to atmosphere.

4,251,281
SYNTHETIC AMORPHOUS SILICA FOR ELASTOMERIC REINFORCEMENT AND METHODS THEREFOR

Jean Machurat, Neuville/s/Saone; Jean-Claude Morawski, Decines, and Georges Vrisakis, Collonges-au-Mont-d'Or, all of France, assignors to Rhone-Poulenc Industries, Paris, France

Continuation of Ser. No. 802,539, Jun. 1, 1977, abandoned. This application May 1, 1979, Ser. No. 35,074
Claims priority, application France, Jun. 4, 1976, 76 16962
Int. Cl.³ C09C 1/28; C01B 33/187
U.S. Cl. 106—288 B **13 Claims**

1. A synthetic amorphous silica adapted for the reinforcement of elastomeric materials and having a reinforcement-effective structure, comprising particulates having a CTAB surface area of from about 80 to about 125 m^2/g, a structure index of at least about 0.80, an oil absorption index (DBP) of from about 240 to about 320 $cm^3/100$ g, a BET surface area of from about 80 to about 310 m^2/g and wherein the ratio of BET area to CTAB area is at least about 1.1, and a wet cake moisture content of from about 75 to 82%.

4,251,282
METHOD OF PREPARING DYE PIGMENTS

Hans-Joachim Vahlensieck, Wehr; Peter Fischer, and Alfred Blümcke, both of Rheinfelden, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 5, 1978, Ser. No. 939,371
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1977, 2739845
Int. Cl.³ C04B 31/00
U.S. Cl. 106—289 **4 Claims**

1. A method of preparing a dye pigment which is water insoluble which comprises hydrolyzing a water soluble dye together with an alkyl alkoxysilane of the formula

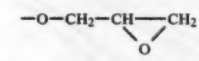
$$(RO)_{4-n}Si(R'X)_n$$

wherein

R represents an alkyl moiety of 1 to 4 carbon atoms,

R′ represents an alkylene moiety of 1 to 6 carbon atoms,

X represents hydrogen or



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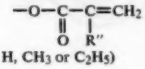


(R″ = H, CH_3 or C_2H_5)

or

wherein

Z_1=H or $-(CH_2)_mNH_2$ (m=2–4),

Z_2=H or Z_1 and

n=1 or 2.

4,251,283
BISMUTH VANADATE PIGMENTS AND PROCESS FOR PREPARING SAME

Luigi Balducci, and Massimo Rustioni, both of Alessandria, Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Oct. 4, 1979, Ser. No. 81,923
Claims priority, application Italy, Oct. 6, 1978, 28495 A/78
Int. Cl.³ C09C 1/00, 1/02, 1/04
U.S. Cl. 106—296 **6 Claims**

1. Greenish-yellow pigments based on bismuth vanadate and having a dominant wave length comprised between 573 and 575 mμ, characterized in that the pigments consist of the calcination product, obtained in the presence of air, of a mixture of $BiPO_4$, V_2O_5 and of an oxide MeO wherein Me is Ca, Ba, Mg or Zn, said calcination being carried out at a temperature of between 500° and 800° C. when Me is Ba, Ca or Mg and of between 500° and 700° C. when Me is Zn, the calcining being followed by a slow cooling down and by a subsequent wet-grinding, and the pigments being further characterized in that the molar ratio Bi_2O_3/P_2O_5 is equal to 1 and the molar ratio Bi_2O_3/V_2O_5 is comprised between 1.39 and 5.59 when Me is Ca, Ba or Zn and between 1.39 and 2.79 when Me is Mg, and

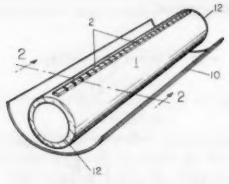
in that the molar ratio MeO/V_2O_5 varies according to the molar ratio Bi_2O_3/V_2O_5 as follows:

molar ratio Bi_2O_3/V_2O_5	molar ratio CaO/V_2O_5 and ZnO/V_2O_5	molar ratio BaO/V_2O_5	molar ratio MgO/V_2O_5
5.59	3–16.7	2–6.2	—
4.19	3–12.5	2–4.8	—
3.35	3–10.0	2–4.2	—
2.79	3–8.3	2–3.6	2–5.6
2.39	3–7.1	2–3.2	2–4.8
2.09	3–6.2	2–3.0	2–4.2
1.86	3–5.5	2–2.8	2–3.7
1.67	3–5.0	2–2.6	2–3.3
1.52	3–4.5	2–2.4	2–3.0
1.39	3–4.2	2–2.3	2–2.8

4,251,284
TUBULAR LUMINESCENT SOLAR COLLECTOR-PHOTOCELL STRUCTURE

Eugene A. Oster, Jr., Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jun. 19, 1978, Ser. No. 917,121
Int. Cl.³ H01L *31/00*
U.S. Cl. 136—247 **7 Claims**

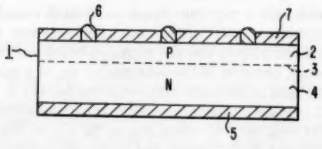


1. A luminescent solar collector and concentrator comprising a radiation collection medium in the form of an elongated tube having essentially parallel inner and outer wall surfaces of extended area, said medium having at least one layer containing at least one luminescent species capable of emitting luminescent radiation upon excitation with incident solar radiation, said medium being totally internally reflective of a major portion of said emitted luminescent radiation, and photovaltaic cells, responsive to said emitted radiation, optically coupled to a relatively small portion of said extended surface area.

4,251,285
DIFFUSION OF DOPANT FROM OPTICAL COATING AND SINGLE STEP FORMATION OF PN JUNCTION IN SILICON SOLAR CELL AND COATING THEREON

Bulent E. Yoldas, and Lubomyra A. Yoldas, both of Churchill, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 14, 1979, Ser. No. 66,368
Int. Cl.³ H01L *21/225, 31/04*
U.S. Cl. 136—256 **20 Claims**

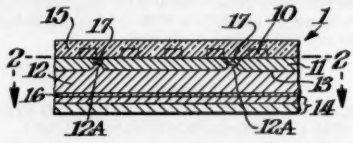


1. A method of doping silicon comprising forming a coating on said silicon from an alkoxide solution partially hydrolyzed with water, where at least 40% of said coating is titania, said coating containing a dopant selected from the group consisting of boron and phosphorus, and heating said coated silicon above the diffusion temperature of said dopant, thereby diffusing said dopant into said silicon.

4,251,286
THIN FILM PHOTOVOLTAIC CELLS HAVING BLOCKING LAYERS

Allen M. Barnett, Newark, Del., assignor to The University of Delaware, Newark, Del.

Continuation-in-part of Ser. No. 944,999, Sep. 22, 1978, abandoned. This application Sep. 18, 1979, Ser. No. 76,596
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—260 **43 Claims**



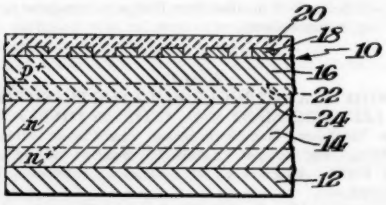
20. In a thin film photovoltaic device having as its components a transparent electrical contact and an opaque electrical contact with an intermediate pair of semiconductors being located between said electrical contacts and said intermediate pair of semiconductors forming a photovoltaic junction therebetween and functioning as a collector-converter and as an absorber-generator, respectively, the improvement being a blocking layer disposed in the electrical path between said transparent and said opaque electrical contacts to prevent undesired electrical contact between components of said device separated from each other by said blocking layer, one of said semiconductors having discontinuities through which the other of said semiconductors is exposed, said blocking layer being located to prevent said other semiconductor from making undesired electrical contact through said discontinuities of said one semiconductor, and said blocking layer being located only in the exposed areas of said other semiconductor.

21. The device of claim **20** wherein said other semiconductor is made of cadmium sulfide or cadmium zinc sulfide and said blocking layer is cadmium sulfate.

4,251,287
AMORPHOUS SEMICONDUCTOR SOLAR CELL

Vikram L. Dalal, Newark, Del., assignor to The University of Delaware, Newark, Del.

Filed Oct. 1, 1979, Ser. No. 80,194
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—258 **26 Claims**



1. In a method for manufacturing a solar cell wherein a substrate is provided as an ohmic contact and an amorphous semiconductor base layer of n-type conductivity is grown on the substrate and an amorphous semiconductor junction layer of p-type conductivity is deposited on the base layer to form a physical junction therebetween and a further electrical contact

is formed on the junction layer, the improvement being incorporating a rapidly diffusing dopant species in said p type junction layer heat treating the physical junction of the base layer and the junction layer to diffuse the dopant species at the physical junction into the base layer to thereby create an electrical junction below the former physical junction.

14. A solar cell made by the method of claim **1**.

4,251,288

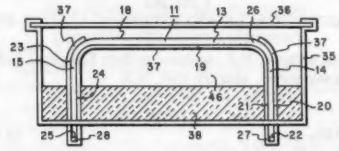
PHOTOVOLTAIC DEVICE WITH SPECIALLY ARRANGED LUMINESCENT COLLECTOR AND CELL

John W. Yerkes, Granada Hills, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 960,137, Nov. 13, 1978, abandoned. This application Dec. 6, 1979, Ser. No. 101,334

Int. Cl.[3] **H01L** *31/00*

U.S. Cl. 136—247 **43 Claims**



1. A photovoltaic device for converting solar radiation to electrical energy comprising a luminescent collector member having at least first and second extensions, each of said extensions having length, width, thickness and inner and outer surfaces, a major part of said outer surface of said first extension being adapted to receive solar radiation emanating from a source, said first and said second extensions extending in a direction such that said first and second extensions are at an angle to each other and in a direction such that a photovoltaic cell may be mounted on said second extension at a point which is further from said source than said outer surface of said first extension when solar radiation is being received by said luminescent collector, and at least one photovoltaic cell mounted on said second extension of said luminescent collector, said at least one photovoltaic cell being entirely located in a manner such that a low light transmitting portion of said photovoltaic device is between said photovoltaic cell and said source and being entirely located away from surfaces directly receiving solar radiaradiation from said source, said at least one photovoltaic cell being adapted to receive and convert to electrical energy solar radiation energy emitting from said luminescent collector into said photovoltaic cell when solar radiation is being received by said luminescent collector.

4,251,289

GRADIENT DOPING IN AMORPHOUS SILICON

Theodore D. Moustakas, Berkeley Heights; Robert A. Friedman, Rahway, and Christopher R. Wronski, Princeton, all of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1979, Ser. No. 108,024

Int. Cl.[3] **C23C** *15/00;* **H01L** *31/04*

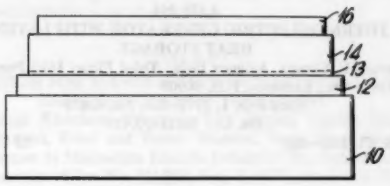
U.S. Cl. 136—255 **9 Claims**

1. A method for producing a gradient doping profile in amorphous silicon comprising:

(a) providing a substrate

(b) coating said substrate with a layer of dopant material selected from the group consisting of antimony, phosphorous, aluminum, lithium, arsenic or a mixture thereof;

(c) RF sputter depositing a layer of photoconductive amorphous silicon while concurrently heating and applying a D.C. positive bias voltage to said dopant layer, where during said deposition the dopant material diffuses into the amorphous silicon layer under the combined driving



forces of the applied bias voltage and the elevated temperature.

4,251,290

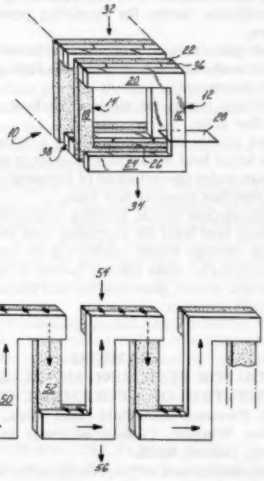
THERMOPILE FORMED OF CONDUCTORS

Ernesto E. Gomez, Avianca Bldg., 3rd Floor, Ponce de Leon Ave., Santurce, P.R. 00909

Filed Jan. 2, 1979, Ser. No. 200

Int. Cl.[3] **H01L** *35/00*

U.S. Cl. 136—206 **16 Claims**



1. A current generator for generating current related to a source of thermal energy, said current generator comprising a thermocouple comprising two materials joined in separate regions one of said regions being thermally hot with respect to the other region, each of said materials comprising an electrical conductor, each of said conductors having a general cross-sectional area taken along a plane substantially perpendicular to the plane formed by the conductor, said conductors being electrically joined together at mating surfaces thereof with the junction area of the mating surfaces between the conductors being greater than the cross-sectional area of either of the conductors, one of said junctions being in one of said regions and the other in the other of said regions, each of the junction areas being substantially equal in size, each of said conductors comprising leg members separated by an intermediate section, said junction between said conductors comprising respective pairs of said leg members joined together in said regions, said intermediate section separating said legs such that said regions

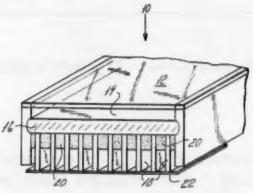
are distant from each other to minimize the thermal effect of one on the other.

4,251,291

THERMOELECTRIC GENERATOR WITH LATENT HEAT STORAGE

Ernesto E. Gomez, Avianca Bldg., Third Floor, 1612 Ponce de Leon Ave., Santurce, P.R. 00909

Filed Feb. 1, 1979, Ser. No. 8,439
Int. Cl.³ H01L *35/00*
U.S. Cl. 136—206 **12 Claims**



1. A thermoelectric generator comprising a thermopile having one end to be placed in a hot region and the other end in a cold region, for the generation of electricity, means for generating regions of relative heat and cold comprising

solar collector means for receiving power from a solar source,

absorber plate means connected with said solar collector means to absorb the heat of the sun impinging on said solar collector means,

heat storage means for storing the heat absorbed in said absorber plate,

said heat storage means comprising a storage material having a latent heat of fusion, said storage material changing its state under the influence of temperature reached when said absorber receives said heat,

said heat storage means forming a source of substantially constant heat level for supplying heat to said thermopile,

said heat storage means conveying its stored heat to said thermopiles to cause electric power to be generated,

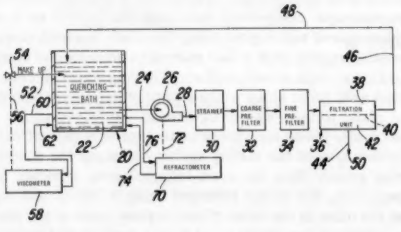
said electric power generated by said thermopile being substantially constant.

4,251,292

METHOD FOR RESTORING MOLECULAR WEIGHT DISTRIBUTION OF A POLYMERIC QUENCHANT

Robert W. Foreman, Bloomfield Hills, Mich., and Anthony G. Meszaros, Windsor, Canada, assignors to Park Chemical Company, Detroit, Mich.

Continuation-in-part of Ser. No. 909,074, May 24, 1978, abandoned. This application Jul. 16, 1979, Ser. No. 57,915
Int. Cl.³ C21D *1/46*
U.S. Cl. 148—18 **2 Claims**



1. A method of operating an aqueous polymeric quenching bath so as to maintain a preselected severity comprising the steps of:

(a) establishing a quenching bath containing an aqueous solution of a polymeric quenchant having a predetermined molecular weight distribution and a resulting severity at a given concentration;

(b) utilizing the quenching bath for cooling of heated metal articles thereby skewing the molecular weight distribution of the polymeric quenchant toward a higher population of lower molecular weights with a resulting change in the severity of the quench at the given concentration;

(c) drawing off a portion of the solution and filtering the drawn off portion to eliminate a substantial portion of the lower molecular weights from the drawn off portion until the molecular weight distribution of the filtrant exhibits a higher population of higher molecular weights than the original bath; and

(d) returning filtrant to the bath until the original predetermined molecular weight distribution has been substantially achieved.

4,251,293

MAGNETICALLY ANISOTROPIC ALLOYS BY DEFORMATION PROCESSING

Sungho Jin, Gillette, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 28, 1979, Ser. No. 16,115
Int. Cl.³ H01F *1/02*
U.S. Cl. 148—101 **19 Claims**

1. Method for producing a magnetic element, said method comprising thermo-mechanical treatment of an alloy which has a characteristic temperature, here designated T_1, such that said alloy is in a solid, predominantly single phase state at temperatures in a first temperature range whose lower limit is T_1, and such that said alloy is in a multi-phase state at temperatures in a second temperature range whose upper limit is T_1, characterized in that said treatment comprises the steps of (1) developing in said alloy particles of a strongly magnetic phase by controlled lowering of temperature from a first temperature in said first range to a second temperature in said second range, and (2) developing magnetic anisotropy in said alloy by plastically deforming said alloy so as to result in a cross-sectional area reduction of at least 30 percent while the temperature of said alloy is in said second range, whereby said particles are deformed resulting in a particle thickness in the range of 200–2000 Angstroms.

17. Magnetic article comprising a body of an alloy which, upon cooling from a first temperature to a second temperature has undergone a phase transformation from a predominantly single phase state to a multi-phase state, said multi-phase state being a predominantly spinodal state, said alloy having a Curie temperature and a spinodal temperature, said Curie temperature being less than said spinodal temperature and characterized in that spinodal structure and grains of said alloy are elongated so as to have an aspect ratio in the range of 1:1.7 to 1:20.

4,251,294

METHOD FOR PRODUCING FULLY-PROCESSED LOW-CARBON ELECTRICAL STEEL

David A. Chatfield, Coraopolis, Pa.; Joseph F. Rzepka, Weirton, W. Va., and Alan C. Preble, Bradford Woods, Pa., assignors to National Steel Corporation, Pittsburgh, Pa.

Filed Aug. 22, 1978, Ser. No. 935,972
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—120 **2 Claims**

1. A method for producing fully processed non-silicon, low-carbon electrical steel, said method being carried out without post-anneal mechanical deformation comprising

(a) providing steel in molten condition consisting essentially of from about 0.03 to about 0.07% carbon, from about 300 p.p.m. to about 800 p.p.m. oxygen, from about 0.03% to about 0.05% phosphorus as measured subsequent to step (b), from about 0.25% to about 1% manganese as measured subsequent to step (b), and the balance being iron,

(b) degassing said steel to reduce the percentage of carbon below 0.02% to a level higher than 0.002%.
(c) forming the degassed material into slabs,
(d) hot rolling the slabs to strip having an intermediate gage,
(e) coiling the strip,
(f) pickling,
(g) cold rolling, and
(h) as a final step, annealing the strip continuously at a temperature within the range 1350° F. to 1550° F. while maintaining sufficient tension on the strip being annealed to produce a flat product suitably for lamination.

4,251,295

METHOD OF PREPARING AN ORIENTED LOW ALLOY IRON FROM AN INGOT ALLOY HAVING A HIGH INITIAL SULFUR CONTENT

Karl Foster; Donald R. Thornburg, both of Forest Hills, and Gary C. Rauch, Murrysville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1979, Ser. No. 38,359
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—120 **5 Claims**

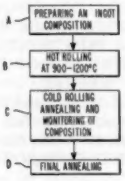
1. A method for producing high-permeability, primarily recrystallized, low-alloy iron, said method comprising;
(a) preparing an ingot alloy consisting essentially of 0.012–0.02% sulfur, 0.1–2.0% silicon, 0.1–2.0% chromium, less than 0.01% manganese, 0.005–0.030% carbon, 0–0.004% oxygen and the balance iron;
(b) hot-rolling at 900°–1200° C.;
(c) annealing for 3–10 hours at 750°–950° C.;
(d) cold rolling with a 50–75% reduction;
(e) annealing for 3–10 hours at 750°–950° C.;
(f) cold-rolling with a 50–75% reduction to final thickness; and
(g) final annealing for 24–72 hours at 800°–1000° C. in an atmosphere principally comprising dry hydrogen.

4,251,296

METHOD OF PREPARING AN ORIENTED-LOW-ALLOY IRON FROM AN INGOT OF CONTROLLED SULFUR, MANGANESE AND OXYGEN CONTENTS

Donald R. Thornburg, Forest Hills; Gary C. Rauch, Murrysville, and Karl Foster, Forest Hills, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 11, 1979, Ser. No. 38,360
Int. Cl.³ H01F *1/00*
U.S. Cl. 148—120 **5 Claims**



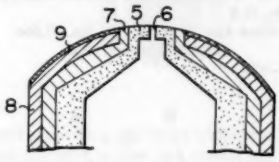
1. A primary recrystallization method of preparing an oriented-low-alloy iron suitable for use as transformer core material, said method comprising:
(a) preparing an ingot alloy consisting essentially of 0.01–0.15 percent manganese, 0.004–0.008 percent sulfur, 0.002–0.100 percent carbon, 0–0.005 percent oxygen, 0–3 percent cobalt and up to 2 percent of at least one of the elements selected from the group consisting of silicon and chromium, with the balance being essentially iron;
(b) hot rolling said alloy at 900°–1200° C.;
(c) a first cold rolling;
(d) controlling the carbon content to 0.002–0.020 percent by a carbon-level-controlling anneal at between 750° C. and the A_{C1} temperature of the material;
(e) cold rolling said alloy to final thickness; and
(f) final annealing said alloy at between 750° C. and the A_{C1} temperature of the material.

4,251,297

METHOD FOR MANUFACTURING MAGNETIC HEAD USING BORONIZING TREATMENT

Hidetsugu Kawabata, Hirakata; Yuji Nagata, Osaka; Keizo Ishiwatari, Kobe, and Toshio Shimizu, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Continuation of Ser. No. 821,408, Aug. 3, 1977, abandoned. This application Jan. 8, 1979, Ser. No. 1,592
Claims priority, application Japan, Aug. 16, 1976, 51-98020; Jan. 18, 1977, 52-4583; Feb. 17, 1977, 52-16968
Int. Cl.³ G11B *5/42*
U.S. Cl. 148—121 **7 Claims**



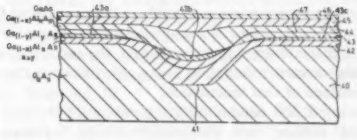
1. A method for manufacturing a magnetic head assembly from components including a permalloy magnetic shielding case having a surface portion thereof adapted to be brought into sliding contact with a magnetic recording medium, said method comprising the steps of
contacting said surface portion with a powdered boronizer comprising boron carbide,
heating said permalloy shielding case including the surface portion thereof which has been contacted with said powdered boronizer in the temperature range between 950° C. and 1100° C. in a hydrogen atmosphere to magnetically anneal said permalloy shielding case and simultaneously convert said surface portion to a wear-resistant boronized layer, and
lowering the temperature of said case including said boronized layer at a rate corresponding to a temperature lowering rate for magnetically annealing said permalloy shielding case.

4,251,298

HETEROSTRUCTURE LASER

George H. B. Thompson, Sawbridgeworth, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 9, 1979, Ser. No. 10,875
Claims priority, application United Kingdom, Feb. 14, 1978, 05811780/78
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **5 Claims**



1. A method of fabricating a heterostructure laser comprising the steps of:
forming a p-n junction in a structure comprising a pair of layers of opposite conductivity type grown by liquid phase epitaxy and having sandwiched therebetween a

quantity of active material of higher refractive index and lower band gap;

growing said layers on a substrate having a groove in its surface under conditions such that the active material is grown thicker in the region overlying the center of the groove than elsewhere; and

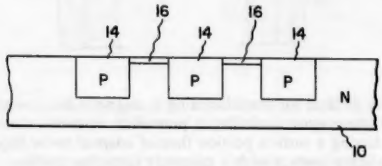
diffusing a zinc dopant through one of the layers to translate the portions of the p-n junction not overlying the groove into the material of the other layer while leaving the portion of the p-n junction overlying the center of the groove bounded on at least one side by the lower band-gap active material.

4,251,299

PLANAR EPITAXIAL REFILL USING LIQUID PHASE EPITAXY

Bantval J. Baliga, Clifton Park, and Gerald B. Gidley, Averill Park, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 17, 1979, Ser. No. 67,564
Int. Cl.³ H01L *21/208*
U.S. Cl. 148—171 **18 Claims**



1. A method of refilling grooves in a silicon wafer of predetermined conductivity type by epitaxial growth of silicon from the liquid phase, comprising:

establishing an oxide layer on a surface of said silicon wafer;

etching grooves extending into said wafer through said oxide layer;

inserting said wafer into a melt at least saturated with silicon and containing conductivity type-determining impurities;

cooling the melt at a controlled rate so as to fill the grooves with epitaxially-grown silicon to a desired extent; and

withdrawing said wafer from said melt upon termination of said cooling.

4,251,300

METHOD FOR FORMING SHAPED BURIED LAYERS IN SEMICONDUCTOR DEVICES UTILIZING ETCHING, EPITAXIAL DEPOSITION AND OXIDE FORMATION

Robert E. Caldwell, San Jose, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed May 14, 1979, Ser. No. 39,070
Int. Cl.³ H01L *21/20, 21/76*
U.S. Cl. 148—175 **13 Claims**

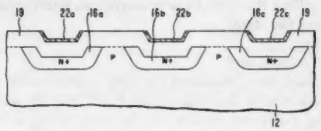
1. A method of making at least one shaped buried layer in a semiconductor structure comprising:

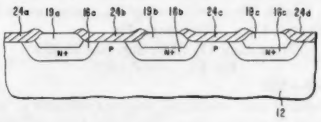
removing a selected portion of semiconductor material from adjacent a first surface of a semiconductor substrate wherever a shaped buried layer is desired, the surface of each thereby created indentation being referred to as the second surface of that indentation;

introducing a first conductivity type impurity through the second surface into the semiconductor substrate to thereby form a region a region of impurity in the semiconductor substrate adjacent the second surface;

depositing epitaxial semiconductor material on all of the first surface and on the second surface of every indentation;

removing epitaxial material from all of the first surface; and forming regions of insulating material on the first surface and on portions of the epitaxial material to electrically isolate each region of epitaxial material on the second surface of





every indentation from every other region of epitaxial material on the second surface of every indentation.

4,251,301

IMPACT RESISTANT PRESSABLE EXPLOSIVE COMPOSITION OF HIGH ENERGETIC MATERIAL CONTENT

H. William Voigt, Jr., Stanhope, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 20, 1979, Ser. No. 50,378
Int. Cl.³ C06B *45/24*
U.S. Cl. 149—12 **10 Claims**

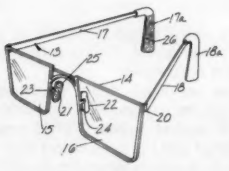
1. An explosive composition comprising a mixture of about from 90% to 99% by weight of at least one particulate first explosive selected from the group consisting of 1,3,5-trinitro-1,3,5-triazacyclohexane and 1,3,5,7-tetranitrol,3,5,7-tetraazacyclooctane and about from 1 to 9% of at least one particulate second explosive selected from the group consisting of 1,3,6,8-tetranitrocarbazole and, 2,4,6,2',4',6',-hexanitrooxanilide.

4,251,302

METHOD OF COATING, LOCATING AND MAINTAINING OPHTHALMIC SUPPORTS OF EYEWEAR PROPERLY POSITIONED WITH RESPECT TO THE EYES ON THE BRIDGE OF THE NOSE OF THE WEARER

James H. Leonard, Brookfield, Wis., and Courtland M. Henderson, Xenia, Ohio, assignors to Site-Tac, Inc., Xenia, Ohio

Filed Jun. 18, 1979, Ser. No. 49,809
Int. Cl.³ G02B *7/02;* B05D *5/10, 1/02, 1/28*
U.S. Cl. 156—60 **18 Claims**



1. A method of coating, locating and maintaining the opthalmic support of eyewear including an eyewear frame having a

lens support portion and a pair of temples hingedly affixed thereto, said lens support portion having nose pieces with skin contacting surfaces, said temples having free ends with facing inside surfaces and the whole properly positioned with respect to the eyes on the bridge of the nose of the wearer, said method comprising the steps of coating selected ones at least of the skin-contacting surfaces of said opthalmic support with a coating having a thickness of 0.0005 inch to about 0.1 inch, said coating being devoid of a reinforcing substrate and comprising a non-toxic pressure-sensitive adhesive that is removable by selected solvents, properly positioning said coated opthalmic support on the wearer's nose and forming a thin and transparent directly bonded coating between said pressure-sensitive adhesive coated skin-contacting surfaces of the opthalmic support and the wearer's skin contacted thereby.

4,251,303

METHOD AND APPARATUS FOR MAKING A FILLET-SEAM CLOSURE ON A FOLDING CARTON, PARTICULARLY A PEAKED-TOP CARTON

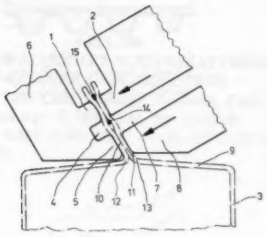
Gerhard Deimel, Opladen; Paul Schmidt, Dusseldorf, and Harald Sturm, Meerbusch, all of Fed. Rep. of Germany, assignors to Jagenberg Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Mar. 19, 1979, Ser. No. 22,007

Claims priority, application Fed. Rep. of Germany, Mar. 20, 1978, 2812137

Int. Cl.[3] **B30B** *15/34;* **B32B** *31/20;* **B65B** *7/18*

U.S. Cl. 156—73.1 **7 Claims**



1. A method of making a fillet seam closure on folding boxes fabricated from boxboard internally lined with aluminum foil and coated with a thermoplastic resin, comprising the steps of: folding the fillet seam along a fold line; holding the areas of the fillet seam to be welded together by applying compressive forces along a line parallel to the desired weld seam and slightly spaced therefrom between the weld seam and the fold line; ultrasonically welding the fillet seam with a simultaneous application of pressure in the weld seam which gradually decreases from the weld seam centerline to the edge facing the fold line to effect the displacement of the thermoplastic resin from the centerline toward the edge and the formation of a V-joint; allowing the weld to cool off; and maintaining the compressive forces during the welding and cooling steps.

3. In an apparatus for making a fillet seam closure on a folding box of boxboard or the like which is internally lined with aluminum foil and coated with a thermoplastic resin, the improvement comprising: first means for both folding the fillet seam along a fold line and applying compressive forces along a line parallel to the desired weld seam and slightly spaced therefrom between the weld seam and the fold line to hold the areas of the fillet seam to be welded together during the welding and the subsequent cooling off; and second means for ultrasonically welding the fillet seam with a simultaneous application of pressure in the weld seam which gradually decreases from the weld seam centerline to the edge facing the fold line to effect the displacement of the thermoplastic resin from the centerline toward the edge and the formation of a V-joint.

4,251,304

HEAT-RECOVERABLE ARTICLES AND THEIR USE

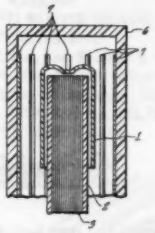
Bruce D. Campbell, Redwood City, and Eugene F. Lopez, Sunnyvale, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 897,805, Apr. 19, 1978, Pat. No. 4,163,117. This application Apr. 19, 1979, Ser. No. 31,388

The portion of the term of this patent subsequent to Apr. 19, 1995, has been disclaimed.

Int. Cl.[3] **B29C** *27/00;* **B32B** *31/00*

U.S. Cl. 156—85 **12 Claims**



1. A method of covering a substrate with a covering member which is sealed around at least one section of said substrate with a covering member which is sealed around at least one section of said substrate, which method comprises

(1) providing an assembly comprising a substrate and a covering member, said covering member comprising a heat-shrinkable band portion which has a closed cross-section and passes around at least one section of said substrate; said section comprising an exterior wall portion composed of a first crystalline polymeric composition which has a gel fraction of at most 0.3 and a crystalline melting point T_1 and in which there is dispersed an absorptive material which absorbs electromagnetic radiation; and said band portion comprising a heat-shrinkable interior wall portion composed of a second crystalline polymeric composition which has a gel fraction of at least 0.3 and a crystalline melting point T_2 equal to at least $(T_1+5)°$ C. and which absorbs electromagnetic radiation; and

(2) exposing the exterior of said heat-shrinkable band portion to electromagnetic radiation, said radiation and said first and second polymeric compositions being such that said band portion absorbs a fraction of said radiation which heats said band portion to its shrinkage temperature and transmits a fraction of said radiation, at least portion of said transmitted fraction being absorbed by said exterior wall portion of the substrate and heating said exterior wall portion of the substrate to a temperature which is at least equal to its crystalline melting point T_1, whereby said interior wall portion of the covering member shrinks into direct sealing contact with said exterior wall portion of the substrate.

4,251,305

METHOD OF RADIANT HEAT SEALING OF A BALLOON ONTO A CATHETER EMPLOYING TINTED SHRINK TUBING

Lawrence F. Becker, Chicago, and Richard W. Cobean, Libertyville, both of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 1, 1978, Ser. No. 956,590

Int. Cl.[3] **B29C** *27/00;* **B32B** *31/00;* **A61H** *25/00*

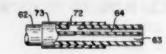
U.S. Cl. 156—86 **19 Claims**

1. A method for using radiant energy for sealing annular ends of a tubular member onto an elongated shaft of a medical device, comprising:

sliding the tubular member over an unfinished elongated shaft of the medical device;

installing a length of tinted shrink tubing to overlie at least a part of both the shaft and the tubular member to form first and second portions that include at least a part of the shrink tubing and of the shaft and tubular member thereunder;

preshrinking said tinted shrink tubing while installed to overlie at least a part of both the shaft and tubular member;



inserting the unfinished shaft including said first and second portions into an enclosure having a cylindrical treatment site providing a band of radiant energy; and

aligning said first and second portions of the unfinished shaft with said band of radiant energy at the cylindrical treatment site for sealing the annular ends of the tubular member to the shaft.

4,251,306

METHOD OF PRODUCING A REINFORCED ENDLESS TOOTHED BELT HAVING A FABRIC COVER

Rudolf Breher, Porta Westfalica, Fed. Rep. of Germany, assignor to BRECO Kunststoffverarbeitungs-GmbH & Co. KG, Porta Westfalica, Fed. Rep. of Germany

Filed Jan. 15, 1979, Ser. No. 3,740

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1978, 2801604

Int. Cl.³ B29H *7/22;* **B32B** *31/00;* **B29C** *17/00;* **B29D** *29/00*

U.S. Cl. 156—138 **2 Claims**

1. A method of producing an endless toothed belt of synthetic material having a filiform reinforcing insert extending in the circumferential direction of the belt and having a fabric cover covering the toothed side of the belt, said method comprising in combination the steps of:

introducing synthetic material into a closed mold cavity;

simultaneously also introducing a fabric strip into said cavity along that shaping surface thereof designed to form the toothed inner side of the belt;

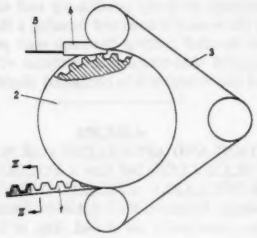
forming a finite toothed belt strand in said mold cavity from said synthetic material and said fabric strip being brought together in securely connected relationship, said fabric strip coating the toothed inner side of said belt strand;

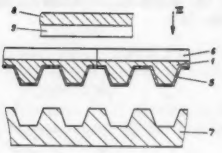
providing the outer side of said belt strand, which outer side is remote from said toothed side, with a plurality of grooves extending in the longitudinal direction of said belt strand;

joining the ends of said belt strand to form an endless ring having its grooved side turned outwardly and having its ends offset laterally relative to one another by the spacing of at least one groove, so that said grooves extend somewhat helically on said ring substantially in the circumferential direction thereof;

starting at one edge of said ring, winding into said grooves a reinforcing insert which fits therein; and

heating the grooved outer side of said ring in such a way as to bring about progressively melting of said synthetic material, fusing of said reinforcing inserts into said





grooves, and closing of said grooves to form a substantially smooth outer surface and finished toothed belt ring.

4,251,307

METHOD FOR COATING A RECTANGULAR CUPBOARD DOOR OR THE LIKE WITH SEMI-RIGID PLASTIC SHEETING

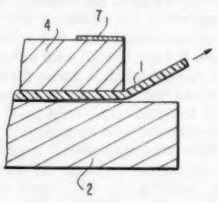
Jan Andersson, Stalverksgatan 3, Västeras, Sweden

Continuation-in-part of Ser. No. 870,167, Jan. 17, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,132

Claims priority, application Sweden, Jan. 18, 1977, 7700454

Int. Cl.³ B32B *31/04, 31/16*

U.S. Cl. 156—163 **1 Claim**



1. A method for direct contact coating of a rectangular rigid cupboard door or the like whose rear surface is pretreated with contact glue with a patterned semi-rigid plastic sheeting with-

out gluing the sheeting to the front surface of the door, said method comprising the steps of:

placing a rectangular piece of plastic sheeting whose width and length are somewhat greater than the corresponding dimension of the cupboard door on a plane, evenly heated supporting plate which is maintained at a constant temperature of at least 50° C.,

placing the cupboard door in direct contact with the sheeting with the front side down,

applying a clamping force on the rear side of the cupboard door with the help of a stationary force device to sandwich the center portion of the sheeting between the door and the plate with the resultant of the clamping force exerted by said device being substantially perpendicular to the front side of the cupboard door, and with the clamping pressure substantially distributed over the whole front surface of the door,

applying a stretching force to a first, fractional portion of a first transversal sheeting margin projecting at one end of the cupboard door,

immediate partial gluing of said fractional portion by pressing it against a surface portion on the rear side of the cupboard door pretreated with contact glue, and

subsequently subjecting a plurality of marginal portions of other transversal sheeting margins projecting at other edges of the cupboard door to individual longitudinal stretching immediately followed by a corresponding pressure of the stretched marginal portion against said pretreated surface portion of the rear side of the cupboard door.

4,251,308

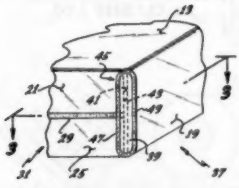
METHOD FOR MAKING A WATERMATTRESS WITH T-CORNER CONSTRUCTION

Craig S. Miller, 7688 Calle Durango, Anaheim, Calif. 92807

Filed Apr. 7, 1978, Ser. No. 894,500

Int. Cl.³ B31F *3/00*; B29C *19/00*; A47C *27/08*

U.S. Cl. 156—211 **11 Claims**



1. A method for making a mattress comprising the steps of:

providing a first piece of sheet material having a generally rectangular configuration defined by a pair of long edges and a pair of short edges;

sealing one of the pairs of edges to each other along a first seam to form a tube having first and second major surfaces alternating with first and second side surfaces;

removing portions of the first and second side surfaces to define marginal portions of the first and second major surfaces at the ends of the mattress;

folding into an overlapping relationship the marginal portions of the first and second major surfaces at one of the ends of the mattress;

sealing the overlapping marginal portions of the first and second major surfaces to each other along a second seam to form a first end surface of the mattress, the first end surface extending into close proximity to the first side surface at a particular corner of the mattress, and defining an opening therebetween, said opening extending at least a portion of the distance between the first and second major surfaces;

providing a second piece of the sheet material having an elongated configuration;

sealing the second piece of sheet material to the first piece of sheet material over said opening along a continuous seam, the continuous seam having first portions connecting the second piece of sheet material to the first end surface and having second portions disposed in substantially the same plane as the first portions and connecting the second piece of sheet material to the first side surface of the mattress.

4,251,309

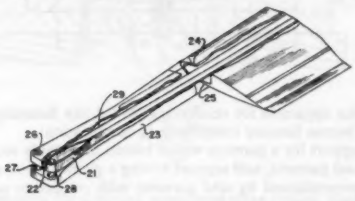
METHOD OF MAKING ROTOR BLADE ROOT END ATTACHMENT

Charles A. Class, Oreland, Pa., and Thomas S. Scarpati, Madison, Conn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 5, 1978, Ser. No. 948,718

Int. Cl.³ B29C *1/14*

U.S. Cl. 156—245 **4 Claims**



1. A method of fabricating a composite helicopter rotor blade comprising inflating an expandable and collapsible elastomeric mandrel, on the inflated mandrel laying up a series of tapes and sheets fabricated of glass fibers preimpreganted with a heat curable resin, looping said tapes to form root end attaching means at one end of the mandrel and then twisting the tapes so that they lay flat on the mandrel away from the root end, laminating the tapes with sheets away from the root end, disposing the resulting laminate to form upper and lower walls and structural reinforcements at stress points, arranging the laminates thus disposed in the contour of a rotor blade, compressing the sheets and tapes thus arranged against the inflated mandrel with external die means forming the final contour of a rotor blade, heating the die means to cure the resin to form the blade, collapsing the mandrel, and withdrawing said mandrel to form an internal cavity within the blade.

4,251,310

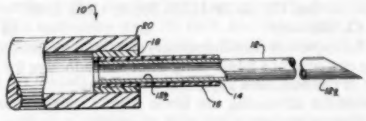
METHOD FOR REBONDING TUBING ELEMENTS USED IN NEEDLE ASSEMBLIES

Richard P. Goldhaber; John M. Munsch, both of Libertyville, and Ludwig Wolf, Jr., Crystal Lake, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Nov. 25, 1977, Ser. No. 854,762

Int. Cl.³ B29C *19/04, 19/06*; A61M *5/00*

U.S. Cl. 156—273 **4 Claims**



1. A method for manufacturing a needle assembly having a fluid-tight seal, which assembly includes a hollow metal needle, a plastic conduit for carrying biological fluids, plastic sleeve means and plastic spacer means between said needle and said conduit, and adhesive means between said needle and sleeve means, wherein the improvement comprises the steps of

employing said needle as one electrode applying a second electrode about the conduit and passing an RF heat-sealing electric current between the needle and electrode so as to fuse said conduit, said spacer means and said sleeve means and provide a fluid-tight junction between the conduit and needle.

4,251,311

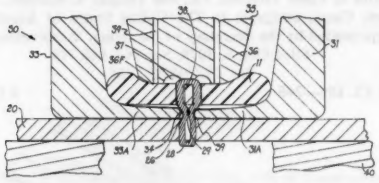
BUTTON ASSEMBLY APPARATUS

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Continuation-in-part of Ser. No. 729,959, Oct. 6, 1976, Pat. No. 4,120,054. This application Oct. 10, 1978, Ser. No. 950,016

Int. Cl.[3] **B32B** *19/02, 7/08;* **D05B** *3/16*

U.S. Cl. 156—380 **8 Claims**



1. An apparatus for reinforcing thread-like fastening means for a button fastener comprising in combination:

a support for a garment with a button threadably secured to said garment, said support having a garment with a button prepositioned by said garment with respect to said support,

a plurality of cooperating dies prepositioned with respect to said support and disposed adjacent the button of said garment supported on said support,

each of said dies having respective tip portions, and means for disposing said tip portions between said button and the surface of said garment to which said button is threadably secured,

means for moving said dies toward and away from each other to permit said dies to engage the filamentary thread-like material joining said button to said garment therebetween, and

means for energizing said dies while they are disposed close to each other to effect the welding together of said filamentary material disposed between said button and said garment in a manner to join said filamentary material to itself and prevent the longitudinal movement of said filamentary material between said button and said garment and to thereby prevent fraying and loosening of said filamentary material.

4,251,312

APPARATUS FOR HEMMING FABRIC USING A HOT MELT ADHESIVE

George E. Ziegler, Jr., Eden, N.C., and Henry S. Hutcherson, New Providence, N.J., assignors to Fieldcrest Mills, Inc., Eden, N.C.

Division of Ser. No. 878,555, Feb. 17, 1978, Pat. No. 4,186,043. This application Mar. 23, 1979, Ser. No. 22,971

Int. Cl.[3] **B32B** *31/20, 35/00;* **C09J** *5/02*

U.S. Cl. 156—465 **10 Claims**

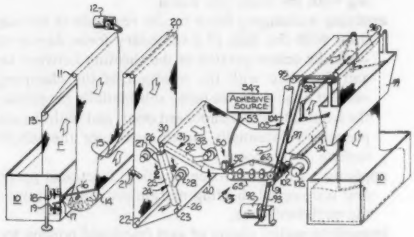
1. An apparatus for continuously forming a longitudinal hem along one edge of a fabric using a hot melt adhesive for securement of the hem, said apparatus comprising

means for advancing the fabric from a supply source and along a predetermined path of travel,

means positioned in the path of travel of the fabric and defining an elongate heating chamber for receiving one longitudinal edge portion of the fabric and for heating the longitudinal edge portion of the fabric as it is advanced through the heating chamber,

folding means located downstream of the heating chamber for receiving the heated longitudinal edge portion of the fabric from the heating chamber and for folding the same upon itself into overlying fabric layers to define a longitudinal hem along said one edge portion of the fabric,

means cooperating with said folding means adjacent the downstream end thereof for applying a stream of molten hot melt adhesive between the overlying fabric layers which define the longitudinal hem, and



means defining an elongate compression zone positioned for receiving the longitudinal hem and for applying pressure thereto to cause the molten adhesive to spread and penetrate into the fabric layers and for also preventing relative movement between the fabric layers until the adhesive has sufficiently cooled to secure the hem together, said means comprising a pair of endless belts, and means mounting the belts for movement along respective elongate paths in opposing contacting relation with one another.

4,251,313

WEB RETAINING DEVICE FOR A CORRUGATION MACHINE

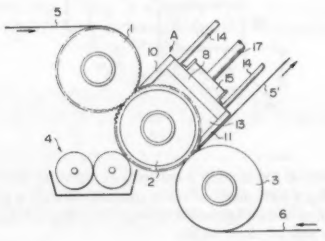
Etsuro Abe, Nagoya, Japan, assignor to Isowa Industry Co., Ltd., Nagoya, Japan

Filed Sep. 6, 1978, Ser. No. 940,025

Claims priority, application Japan, Oct. 3, 1977, 52-119817

Int. Cl.[3] **B31F** *1/00*

U.S. Cl. 156—473 **8 Claims**



1. In a corrugating machine, a web retaining device comprising a pair of first and second corrugating rolls having flutes meshing with each other to define a first contact region, between which a web is passed to form corrugations therein, a pressure roll cooperating with said second corrugating roll to press a facing sheet into contact with a corrugated web and to define a second contact region, the web contacting the second corrugating roll at the first contact region, traveling with the second corrugating roll from the first to the second contact region, and exiting from the second corrugating roll at the second contact region, said second corrugating roll being provided with a plurality of longitudinally spaced annular suction grooves formed in the peripheral surface therof, and suction means for applying subatmospheric pressure to the second corrugating roll over the uncovered surface thereof between the second contact region and the first contact region

and through said annular suction grooves to the corrugated web during its travel around said second corrugating roll between said first corrugating roll and said pressure roll, the applied pressure sucking the corrugated web onto said second corrugating roll and retaining the corrugations in the flutes of the roll while the corrugated web is in transit from said first to said second contact region, said suction means comprising a suction chamber extending axially relative to the second corrugating roll at least equal to the web width and positioned to cover the uncovered peripheral surface of said second corrugating roll as it rotates between said second and said first contact regions, and said suction chamber adapted to supply subatmospheric pressure to the said uncovered peripheral surface and to portions of said rotating annular suction grooves covered by the corrugated web and including first wall means extending towards and terminating closely adjacent the first contact region defined by the meshing of the first and second corrugating rolls, and second wall means extending towards and terminating closely adjacent the second contact region defined by the second corrugating and pressure rolls, the wall means and associated rolls defining seals for substantially maintaining the integrity of the subatmospheric pressure being applied by the suction chamber.

4,251,314

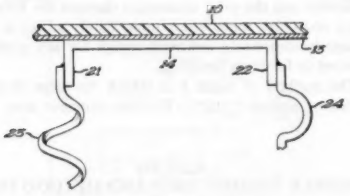
HEAT BONDING DEVICE

Orin B. Johnston, 5548 W. 78th St., Edina, Minn. 55435

Continuation-in-part of Ser. No. 827,668, Aug. 25, 1977, abandoned, which is a continuation-in-part of Ser. No. 697,746, Jun. 21, 1976, abandoned, which is a continuation of Ser. No. 499,449, Aug. 22, 1974, Pat. No. 3,964,958, which is a continuation-in-part of Ser. No. 326,534, Jan. 24, 1973, abandoned. This application Sep. 6, 1979, Ser. No. 73,148

Int. Cl.³ B30B *9/22*

U.S. Cl. 156—583.1 **3 Claims**



1. In apparatus for joining heat bondable materials by the application of heat and pressure along a predetermined seam area by means of a flexible diaphragm one side of which is pressed by fluid pressure which flexes its material engaging side convexly against the materials, said diaphragm comprising a web carrying permanently bonded thereto on its non-material pressing side a flexible heating element having a different coefficient of expansion from that of the web and adapted to apply heat through the web to said area while the diaphragm is so pressed, the improvement for minimizing separation forces between the heating element and the web during heating and for minimizing the mass of said element for quick heating and cooling wherein said flexible heating element comprises a thin ribbon bonded to said web along only a portion of its length so as to terminate in outwardly turned portions comprising flexible tabs extending away from the plane of the web for connection to a source of electrical power at locations remote from the area wherein said ribbon is bonded to said web whereby the mass of heating element in contact with said web remains unchanged throughout its length, said improvement further comprising spring-like leads connected to said tabs permitting said diaphragm to flex in operation in a direction normal to its plane while minimizing separation forces imparted to said ribbon by the leads.

4,251,315

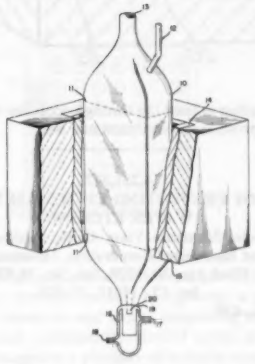
METHOD OF GROWING METAL HALIDE AND CHALCOGENIDE CRYSTALS FOR USE AS INFRARED WINDOWS

Antonio C. Pastor, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Nov. 19, 1976, Ser. No. 743,264

Int. Cl.³ C30B *21/02*

U.S. Cl. 156—616 R **6 Claims**



1. A process for growing monocrystalline optical materials having substantially parallel uncut major surfaces, comprising the steps of:

(a) providing a container with a volume which is bounded in part at least by two substantially parallel planes which correspond to said major surface of material to be grown;

(b) depositing a polycrystalline material in said container;

(c) melting said polycrystalline material in a controlled temperature zone;

(d) introducing a coolant into the lower end of said container whereby the temperature of said molten material is lowered to its crystallization point and a solid liquid interface is established;

(e) moving said interface along one dimension of said polycrystalline melt to cause recrystallization of said melt along said parallel planes and thereby convert said melt to monocrystalline material whereby the ratio of the surface area of said major surface to the volume of the grown monocrystalline material boule is maximized.

4,251,316

METHOD OF MAKING HEATED MIRRORS

Robert A. Smallbone, Bognor Regis, England, assignor to Britax (Wingard) Limited, Chichester, England

Continuation of Ser. No. 847,095, Oct. 31, 1977, abandoned. This application Aug. 30, 1979, Ser. No. 71,049

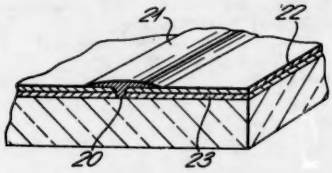
Claims priority, application United Kingdom, Nov. 15, 1976, 47454/76

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*

U.S. Cl. 156—634 **23 Claims**

1. A method of producing a heated mirror comprising the steps of silvering a layer of electrically conductive reflective silvering directly upon a rear surface of an electrically insulating glass substrate to form a unitized laminate having a reflective surface as viewed through the glass substrate, scoring a line completely through the layer of silvering to the glass substrate to electrically insulate portions of the conductive material on opposite sides of the resulting through scoreline

from each other whereby resultant conductive portions define a predetermined electrically conductive path, and subsequently covering at least the through scoreline with insulating material to provide an environmental seal.

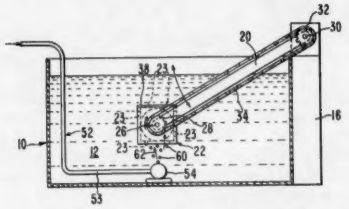


4,251,317

METHOD OF PREVENTING ETCH MASKING DURING WAFER ETCHING

Louis L. Foote, Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 30, 1979, Ser. No. 34,824
Int. Cl.³ H01L *21/306*
U.S. Cl. 156—639 **1 Claim**



1. A method of etching wafers supported adjacent respective edge portions thereof in a cassette, comprising:

submerging the cassette and wafers supported thereby in an etchant bath, the cassette having longitudinal open portions through which etchant can reach the wafers;

continuously rotating the cassette and wafers supported thereby in said etchant both; and

causing agitation of the wafers by providing gas bubbles in the etchant longitudinally beneath the cassette so that the bubbles travel in a direction perpendicular to the axis of rotation through the longitudinal open portions whereby the wafers will be agitated relative to the cassette to aid etchant reaching the edge portions of the wafers.

4,251,318

METHOD OF MAKING FULLY ETCHED TYPE-CARRIER ELEMENTS

Gary Oberg, Darwin; Gerald F. Wocken, Hutchinson; Daniel E. Huntwork, Hutchinson, and Wayne M. Fortun, Hutchinson, all of Minn., assignors to Hutchinson Industrial Corporation, Hutchinson, Minn.

Filed Jun. 29, 1979, Ser. No. 53,410
Int. Cl.³ B41J *1/16, 1/26;* C23F *1/04*
U.S. Cl. 156—645 **9 Claims**

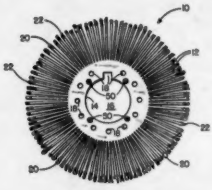
1. The method of forming from metal stock a one-piece type-carrier element of the kind having a center portion and a plurality of arms extending therefrom, each arm having a printing surface and an oppositely disposed impact surface, the printing surface including integral print characters, comprising the steps:

coating both surfaces of the metal stock with photoresist material;

forming images defining the overall outline shape of the carrier element in the photoresist on one surface of the metal stock, hereinafter referred to as the impact surface thereof and defining first stage characters on the other surface of the metal stock, hereinafter referred to as the printing surface thereof, the images being in register;

removing photoresist to expose the metal stock except for that photoresist on the impact surface covering the carrier element shape and that photoresist on the print surface covering the first stage character shapes, and photoresist, if any, on both surfaces of the metal stock selected to facilitate handling during fabrication;

forming second stage character images defining selected print characters in the photoresist remaining on the printing surface first stage character areas without further exposure of the photoresist on the impact surface;



etching the exposed metal stock on the impact surface only to a predetermined depth;

etching the exposed metal to a predetermined depth on both the impact and the printing surfaces of the metal stock;

removing the remaining photoresist material from the printing surface except for that which defines the second stage print characters; and

further etching the exposed metal on both the impact and printing surfaces until breakthrough occurs whereby the element and the print characters thereon are formed and any remaining metal stock immediately adjacent the element is completely removed except for any portions selected to facilitate handling.

7. The method of claim 1 in which the steps thereof are preceded by a coining step to form the concave area.

4,251,319

BUBBLE MEMORY CHIP AND METHOD FOR MANUFACTURE

G. Patrick Bonnie, Richfield, and Steven C. Schuster, White Bear Lake, both of Minn., assignors to Control Data Corporation, Minneapolis, Minn.

Division of Ser. No. 23,995, Mar. 27, 1979. This application Dec. 21, 1979, Ser. No. 106,305
Int. Cl.³ B44C *1/22;* G11C *19/08;* B05D *5/12*
U.S. Cl. 156—656 **3 Claims**

1. A method for forming a bubble memory chip comprising the steps of depositing a first layer of dielectric insulator on a garnet substrate,

depositing a second layer of dielectric insulator on the surface formed of the first dielectric insulator, the second dielectric insulator being of a material which will be etched by a particular process which will not affect the first dielectric insulation layer,

applying an initial resist pattern in the reverse image of the predetermined desired conductor pattern to be formed,

straight wall etching the second dielectric layer according to

the pattern formed by the resist material by not etching the first dielectric insulator layer of material,

applying a conductor material by a deposition process into the grooves formed by the previous etching process and on the surface of the remaining resist material,

applying a coarse featured resist material over the comparatively small portion of the chip corresponding to approximately five percent more or less of the surface area of the finished chip which is desired to be covered by a conductor pattern at the conclusion of processing an in coarse and not exact registration with the conductor features to be preserved but not over any comparatively larger features of the chip which are to have no conductor pattern,

etching by chemical means all of the conductor material not covered by the coarse resist material applied in the previous step, and

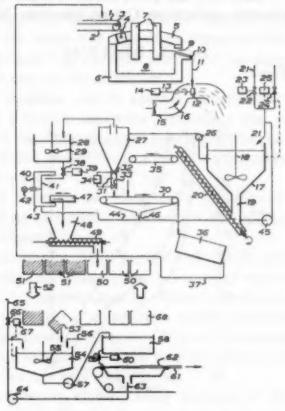
stripping away the coarse resist material left from the previous step and lifting off unused conductor material along with said initial photoresist to leave a planar surface comprised of conductor material formed in the pattern of conductor elements at a surface coplanar with the surface of the second dielectric insulator material.

4,251,320

METHOD OF PRODUCING A MINERAL FIBER PRODUCT

Gunnar N. Cederqvist, Lerdala, and Ulf L. Aberg, Skövde, both of Sweden, assignors to Rockwool Aktiebolag, Skövde, Sweden

Filed Nov. 30, 1976, Ser. No. 746,130
Claims priority, application Sweden, Jan. 19, 1976, 7600462
Int. Cl.³ D21B *1/00*
U.S. Cl. 162—55 **10 Claims**



1. A method for producing a dispersible intermediate mineral fiber product derived from silicate containing materials comprising:

(a) dispersing said fibers in water in the presence of a wetting agent;

(b) separating particulate material in the mineral fibers from the dispersed fiber material such that the mineral fibers are dispersed in an amount not greater than 7 percent by weight based upon the amount of liquid in the dispersion and separation stage; and

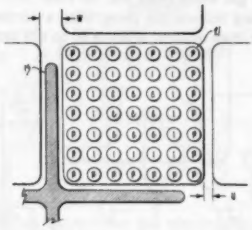
(c) partially drying said fibers by mechanical dewatering to a dry content of from 30 to 70 percent by weight and a fiber density of from 200 to 400 kg/m³.

4,251,321

NUCLEAR REACTOR UTILIZING PLUTONIUM

Russell L. Crowther, Saratoga, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 48,875, Jun. 15, 1970, abandoned, which is a continuation of Ser. No. 691,044, Dec. 15, 1967, abandoned. This application Apr. 4, 1973, Ser. No. 347,916
Int. Cl.² G21C *3/30*
U.S. Cl. 176—78 **8 Claims**



1. A nuclear fuel element assembly for use with other fuel assemblies in a thermal reactor, comprising: a plurality of elongated fuel elements, and means supporting said fuel elements in a spaced, substantially parallel array, said fuel elements being arranged in a plurality of radially separate groups in said assembly, the initial fissile fuel in the fuel elements in at least one group initially consisting of enriched fissile uranium, and the fuel elements in at least one other group containing initial fissile plutonium, said plutonium containing fuel elements comprising at least nine of the fuel elements of said fuel element assembly wherein the fuel elements in said other group are located in outer fuel rod positions of said assembly.

4,251,322

PROCESS FOR TREATING COKE OVEN DOORS AND JAMBS TO PREVENT THE BUILD UP OF TAR THEREON

Michael D. La Bate, 115 Hazen Ave., Ellwood City, Pa. 16117

Continuation-in-part of Ser. No. 948,886, Oct. 5, 1978, Pat. No. 4,187,335, which is a continuation-in-part of Ser. No. 905,513, May 15, 1978, abandoned. This application Jul. 20, 1979, Ser. No. 59,306
The portion of the term of this patent subsequent to Feb. 5, 1997, has been disclaimed.
Int. Cl.³ B08B *17/02*; C10B *25/16*
U.S. Cl. 201—2 **8 Claims**

1. A process of treating the engaging portions of steel coke oven doors and jambs that consists essentially of the steps of cleaning said portions of said doors and jambs to the bare metal, penetrating a liquid suspension of micro micron particles of graphite into said portions, said liquid suspension including at least 5% to 25% micro micron size particles of graphite, applying enough of said liquid suspension of graphite to form a smooth covering coating on said metal portions and building up sufficient excess of graphite on said portions to effectively seal a door to a jamb during operation of an oven.

4,251,323

METHOD FOR CALCINING DELAYED COKE

John H. Smith, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Apr. 16, 1979, Ser. No. 30,251
Int. Cl.³ C10B *49/06*
U.S. Cl. 201—29 **4 Claims**

1. A process for calcining delayed petroleum coke in an internally-fired vertical shaft kiln comprising:

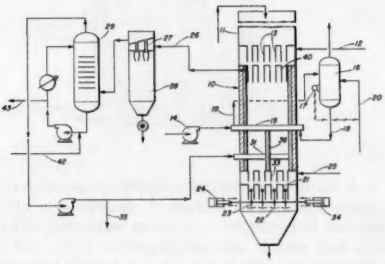
(a) feeding particulate green delayed petroleum coke at a rate of from 0.5 to 2.5 tons per day per square foot of kiln

cross section into the top of a vertical shaft kiln to form a downwardly-moving bed of material to be calcined;

(b) introducing combustion air in an amount of from 20 to 60 mols per ton of dry green coke feed into an intermediate level of said kiln to provide a combustion zone and to generate heat by internal burning;

(c) recovering an off gas stream comprised of internally-generated flue gas and volatile material released from said coke from the upper section of said kiln, the temperature of said off gas being from 300° to 1100° F.;

(d) introducing recycle gas comprising a portion of said off gas stream in an amount of from 80 to 120 mols per ton of



dry green coke feed into the lower section of said kiln for upward movement therethrough for recovering heat from coke below the combustion zone and for returning said heat to coke in and above the combustion zone;

(e) controlling the rates of recycle gas introduction, combustion air introduction and green coke feed to provide a calcining temperature of at least 2000° F. for a period of at least one hour for the coke moving therethrough and to maintain the temperature of the off gas leaving said kiln above its hydrocarbon dew point; and

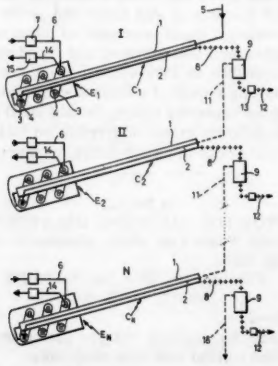
(f) recovering partially cooled calcined coke from the bottom of said kiln.

4,251,324

INSTALLATION FOR PURIFICATION OF A LIQUID COMPOUND

Leon J. Wanson, Brussels, Belgium, assignor to Etablissements Wanson, Construction de Materiel Thermique, Brussels, Belgium

Filed Dec. 5, 1978, Ser. No. 966,559
Int. Cl.³ B01D 1/26
U.S. Cl. 202—174 **9 Claims**



1. An installation for the purification of at least one liquid compound, comprising a plurality of distillation stages, each distillation stage comprising:

liquid compound feed means for parallel feeding to each and every of said stages;

first preheater heat exchange means having a first inlet connected to said liquid compound feed means and having a first outlet for the preheated liquid compound, said first heat exchange means further having a second inlet connected to admit a heating fluid and having a second outlet for the cooled heating fluid;

second distillate heat exchange means having a first inlet connected to the first outlet of said first preheater heat exchange means and having a first outlet for the distillate, said second heat exchange means further having a second inlet connected to admit heating fluid and having a second outlet connected to the second inlet of said first preheater heat exchange means;

separator means having an inlet connected to the first outlet of said second distillate heat exchange means and further having a first outlet for vapor and a second outlet for the bottoms;

means for conveying the vapor from the first outlet of said separator means to the second inlet of said second heat exchange means in the next distillate stage;

first discharge means for discharging the bottoms from said second outlet of the separator means; and

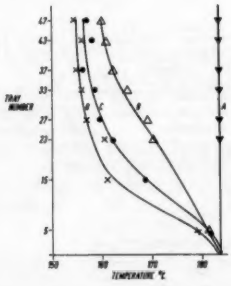
second discharge means for discharging the vapor from said first outlet of the separator means in the last distillation stage for utilization.

4,251,325

PROCESS FOR THE REMOVAL OF HYDROXYACETONE FROM PHENOL

Christopher R. Marsh, Grangemouth, and James A. Russell, Edinburgh, both of Scotland, assignors to BP Chemicals Limited, London, England

Filed Feb. 23, 1979, Ser. No. 14,627
Claims priority, application United Kingdom, Mar. 4, 1978, 08662/78
Int. Cl.³ B01D 3/42
U.S. Cl. 203—2 **13 Claims**



1. A process for the removal of hydroxyacetone-contaminated phenol obtained by the decomposition of cumene hydroperoxide, which phenol is substantially free from cleavage catalyst and light ends comprising acetone and water, which process comprises feeding said phenol and cumene and/or alpha-methyl styrene in a concentration up to 22% by weight to an intermediate point in a single distillation column provided with conventional reboiler, condensing and refluxing facilities, removing overhead a fraction comprising cumene and/or alphamethyl styrene and a substantial proportion of the hydroxyacetone in the feed and removing as a base product a fraction comprising phenol containing less than 30 ppm hydroxyacetone whilst controlling the temperature and pressure conditions in said single column so that cumene and/or alpha-

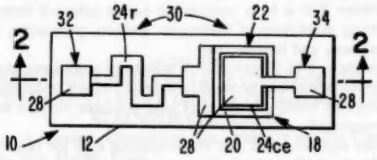
methyl styrene forms from 55 to 80% by weight of the composition on the uppermost 15 to 70% of the trays in the stripping section and phenol forms greater than 50% by weight of the composition on the bottommost 10 to 50% of the trays in the stripping section.

4,251,326

FABRICATING AN RC NETWORK UTILIZING ALPHA TANTALUM

Frank R. Arcidiacono, North Andover, and Gerard J. Koerckel, Andover, both of Mass., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Dec. 28, 1978, Ser. No. 974,162
Int. Cl.³ C25D *11/02, 11/18*
U.S. Cl. 204—15 **2 Claims**



1. A method of fabricating a thin film RC network, which comprises the steps of:

forming a capacitor base electrode of alpha tantalum on a substrate;

forming a capacitor dielectric on a first portion of the capacitor base electrode to a desired thickness in a single anodizing step such that a second portion of the capacitor base electrode remains unanodized;

forming a tantalum nitride resistor film directly over the resultant substrate assembly, including the unanodized portion of the alpha tantalum base electrode and the anodized capacitor dielectric, at a substrate assembly temperature below on the order of 300° C.;

sequentially forming an electrically conductive adhesive layer and an electrically conductive film on the tantalum nitride resistor film;

sequentially etching away portions of the electrically conductive film and underlying portions of the electrically conductive adhesive layer to define a conductor network, to form a portion of a capacitor counterelectrode formed by the electrically conductive film and the adhesive layer, and to expose a section of the tantalum nitride resistor film destined for use as a resistor;

then simultaneously etching away portions of the tantalum nitride resistor film to form a resistor electrically connected to one of the capacitor electrodes and to complete the formation of a conductor network direct-connected by associated circuit paths, including the resistor, to the capacitor counterelectrode and the unanodized portion of the capacitor base electrode, the etching operation including the etching away of a small portion of the tantalum nitride resistor film formed on the anodized capacitor dielectric to form a portion of the capacitor counterelectrode formed by the tantalum nitride resistor film; and

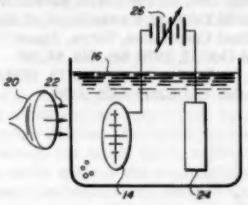
thermally stabilizing the RC network at a temperature not greater than on the order of 300° C. after the portions of the electrically conductive film, the adhesive layer and the tantalum nitride resistor film have been removed.

4,251,327

ELECTROPLATING METHOD

Lawrence A. Grenon, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Continuation-in-part of Ser. No. 17,203, Mar. 2, 1979, abandoned. This application Jan. 14, 1980, Ser. No. 111,617
Int. Cl.³ C25D *5/02;* **H01L** *31/18*
U.S. Cl. 204—15 **12 Claims**



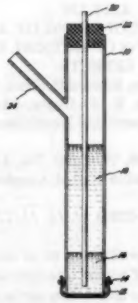
1. An improved method for the electrolytic deposition of metal onto major surfaces of a PN junction photovoltaic device, one of said surfaces being of a first conductivity type and at least a portion of a second of said surfaces being of opposite conductivity type, said device being immersed in a plating bath containing ions of said metal to be deposited, which comprises the steps of: electrically contacting said surface of a first conductivity type; immersing an anode in said plating bath and applying a voltage between said first conductivity type surface and said anode, thereby completing a circuit through said bath; and illuminating said portion of said second of said surfaces of opposite conductivity type with a source of radiant energy.

4,251,328

GALLIUM PLATING

Richard S. Tunder, San Jose, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 20, 1980, Ser. No. 132,276
Int. Cl.³ C25D *5/06, 17/14;* **C25F** *5/00*
U.S. Cl. 204—15 **18 Claims**



1. A plating and deplating brush for application of gallium on an electrically conductive workpiece, comprising:

an inert, nonconductive vessel with an opening of selected diameter at the bottom thereof;

a porous, gallium impermeable tip closing off said opening;

a quantity of liquid gallium disposed within said vessel in contact with said tip;

a liquid electrolyte acting as a source of hydroxy ions and as a carrier for gallium, said electrolyte floating on said liquid gallium; and

an electrode extending into said gallium whereby a potential difference may be applied between said brush and said

workpiece to effect selective plating and deplating of the workpiece surface with gallium.

4,251,329

PROCESS FOR PRODUCING A HIGHLY CORROSION RESISTANT ELECTROPLATED STEEL SHEET

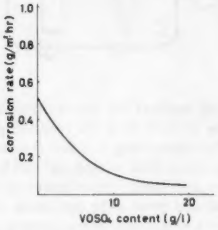
Hidejiro Asano; Joji Oka, both of Tokyo; Katushi Saito, Yokohama, and Masashi Takasugi, Kawasaki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Oct. 12, 1979, Ser. No. 84,299

Claims priority, application Japan, Oct. 13, 1978, 53-125925

Int. Cl.³ C25D *7/06, 3/56*

U.S. Cl. 204—27 **12 Claims**



1. A process for producing a highly corrosion resistant electroplated steel sheet characterized by performing electroplating in an acidic plating bath with a steel sheet used as the cathode, said bath comprising an aqueous solution containing zinc, nickel and one or more third components selected from the group consisting of vanadium (II), vanadium (III), vanadium (IV) and vanadium (V) compounds (the FIGS. II, III, IV and V indicating the valence of vanadium), the content of vanadium being between 0.001 and 0.5 mols per mol of the sum of zinc and nickel.

4,251,330

ELECTROLYTIC COLORING OF ANODIZED ALUMINIUM BY MEANS OF OPTICAL INTERFERENCE EFFECTS

Peter G. Sheasby, Bloxham; Edward P. Short, North Aston, both of England, and Tarun K. S. Gupta, Maharahstra, India, assignors to Alcan Research and Development Limited, Montreal, Canada

Filed Jan. 16, 1979, Ser. No. 3,892

Claims priority, application United Kingdom, Jan. 17, 1978, 1874/78

Int. Cl.³ C25D *11/12, 11/22*

U.S. Cl. 204—35 N **14 Claims**

1. In a process for the production of an anodised aluminium article colored by virtue of optical interference, comprising the steps of establishing on the aluminium surface a porous anodic film having a thickness of at least 3 microns and enlarging the pores in the film such that upon electrolytically depositing an inorganic material in the enlarged pores the average size of the upper surface of the individual deposits of the deposited material is at least 26 nm and such upper surface is between 50 nm and 300 nm from the interface formed by the aluminium surface and the anodic oxide film, the improvement which comprises:

in the pore-enlarging step, enlarging the pores particularly toward their lower ends in the presence of an acid electrolyte, characterised by its strong dissolving power for aluminium oxide, and a pore enlarging alternating current passing between said aluminium article and a counter electrode.

4,251,331

BATHS AND ADDITIVES FOR THE ELECTROPLATING OF BRIGHT ZINC

William E. Rosenberg, Strongsville, Ohio, assignor to Columbia Chemical Corporation, Cleveland, Ohio

Filed Jan. 17, 1980, Ser. No. 113,120

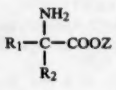
Int. Cl.³ C25D *3/22*

U.S. Cl. 204—55 R **25 Claims**

1. A zinc brightening agent for addition to zinc electroplating baths, comprising:

from about 1 to about 98 percent by weight of a zinc brightener selected from the group consisting of alpha-aminoaliphatic carboxylic acids, salts of alpha-aminoaliphatic carboxylic acids, and combinations thereof;

said zinc brightener having the formula:



where R_1 and R_2 are hydrogen, alkyl, alicyclic, alkyl aryl, or aryl groups, having from 1 to 12 carbon atoms and where Z is a bath compatible cation selected from the group consisting of hydrogen, sodium, potassium, zinc, calcium, and lithium; and

from about 1 to 98 percent by weight of a nonionic surface active compound containing at least 6 moles of condensed ethylene oxide per mole of said nonionic surface active compound.

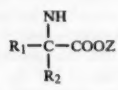
13. An aqueous, acid zinc electroplating bath for producing a bright electrodeposit of zinc, comprising:

from about 15 to about 60 grams per liter of bath of zinc ions dissolved in the bath;

from about 75 to about 175 grams per liter of bath of chloride ions dissolved in the bath;

from about 0.5 to about 10 grams per liter of bath of a zinc brightener selected from the group consisting of alpha-aminoaliphatic carboxylic acids, salts of alpha-aminoaliphatic carboxylic acids, and combinations thereof;

said zinc brightener having the formula:



where R_1 and R_2 are hydrogen, alkyl, alicyclic, alkylaryl, or aryl groups having from 1 to 12 carbon atoms and where Z is a bath compatible cation selected from the group consisting of hydrogen, sodium, potassium, zinc, calcium, and lithium; and

from about 0.5 to about 20 grams per liter of bath of a nonionic surface active compound containing at least 6 moles of condensed ethylene oxide per mole of said nonionic surface active compound.

4,251,332

ELECTROLYTIC REDUCTION OF NAPHTHALENE TO ISOTETRALIN

David Ginsburg, Haifa, Israel, and Wilfried J. W. Mayer, Stuttgart, Fed. Rep. of Germany, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 27, 1979, Ser. No. 70,137

Int. Cl.³ C25B *3/04*

U.S. Cl. 204—59 R **3 Claims**

1. A process for the production of isotetralin from naphthalene which comprises the electrolysis of a solution of (a) naphthalene, (b) an electrolyte of lithium chloride or sodium chloride, and (c) an alcohol of methanol, ethanol or isopropanol in a solvent of either ethylene diamine or liquid ammonia.

4,251,333
ELECTROLYSIS OF AQUEOUS SOLUTION OF ALKALI METAL CHLORIDE

Manabu Suhara, and Kiyotaka Arai, both of Yokohama, Japan, assignors to Asahi Glass Company, Ltd., Tokyo, Japan

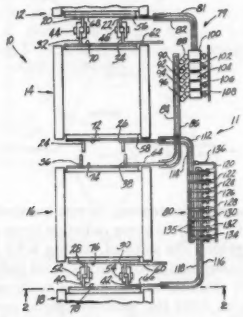
Continuation-in-part of Ser. No. 952,009, Oct. 17, 1978. This application Aug. 8, 1979, Ser. No. 65,009
Claims priority, application Japan, Oct. 21, 1977, 52-125808
Int. Cl.³ C25B *1/16, 1/26, 13/08*
U.S. Cl. 204—98 10 Claims

1. An electrolysis of an aqueous solution of an alkali metal chloride to produce an alkali metal hydroxide having a concentration of 30 wt.% or more and chlorine which comprises using a modified cation exchange membrane of a fluorinated polymer having essentially only carboxylic acid type ion exchange groups which has an ion exchange capacity of 1.0 to 2.2 meq/g. dry polymer and wherein one surface layer has a lower ion exchange capacity than that of the major portion of the membrane and is from 0.9 to 1.6 meq/g. dry polymer.

4,251,334
METHOD AND APPARATUS FOR CONTROLLED, LOW CURRENT START-UP OF ONE OF A SERIES OF ELECTROLYTIC CELLS

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Filed Mar. 17, 1980, Ser. No. 130,950
Int. Cl.³ C25C *15/02, 9/00, 9/04*
U.S. Cl. 204—98 8 Claims



1. A method of connecting and starting up one disconnected cell into a series of electrolytic membrane cells connected in electrical series through a first shunt bypassing the disconnected cell, which method comprises the steps of:

(a) electrically connecting said disconnected cell in parallel with an adjacent cell but in series with the remainder of the cells in said electrical series;

(b) diverting a portion of the current which would normally flow through said adjacent cell so that a portion of said current flows instead through said formerly disconnected cell; and

(c) running both said formerly disconnected cell and said adjacent cell in parallel for a predetermined time, whereby the current through said formerly disconnected cell and said adjacent cell are both run at lower than normal current during said predetermined time so as to break-in a membrane of said formerly disconnected cell.

4,251,335
PROCESS FOR THE DECHLORINATION AND COOLING OF THE ANOLYTE OF THE ALKALI METAL HALIDE ELECTROLYSIS

Dieter Bergner; Kurt Hannesen, both of Kelkheim; Wolfgang Müller, Bad Soden am Taunus, and Wilfried Schulte, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

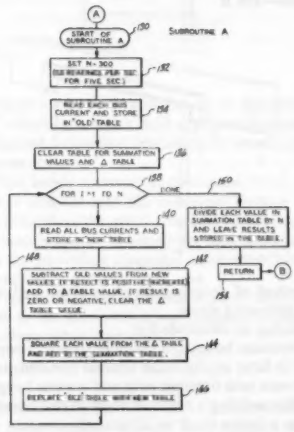
Filed Apr. 10, 1980, Ser. No. 138,884
Claims priority, application Fed. Rep. of Germany, Apr. 12, 1979, 2914870
Int. Cl.³ C25B *1/34*
U.S. Cl. 204—98 18 Claims

1. Process for the dechlorination and cooling of the anolyte of an alkali metal chloride electrolysis by pressure release, which comprises effecting the electrolysis under a pressure of at least 8 bars in the anode space, separating the products leaving the anode space of the electrolytic cell (anolyte and resulting gases) mechanically by means of a separator, depressurizing the separated anolyte with a temperature above the boiling point of the anolyte at atmospheric pressure into a stripping column to a pressure between atmospheric pressure and 2 bars, with the proviso that under these conditions the anolyte is brought to the boil, and separating subsequently the anolyte freed from chlorine by said pressure release from the gaseous phase having been formed in the stripping column.

4,251,336
METHOD FOR DETECTING INCIPIENT SHORT CIRCUITS IN ELECTROLYTIC CELLS

Richard W. Ralston, Jr., Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Continuation-in-part of Ser. No. 14,176, Feb. 22, 1979, Pat. No. 4,174,267, which is a continuation-in-part of Ser. No. 919,530, Jun. 27, 1978, Pat. No. 4,155,829, which is a continuation-in-part of Ser. No. 605,582, Aug. 18, 1975, Pat. No. 4,098,666, which is a continuation-in-part of Ser. No. 489,647, Jul. 18, 1974, Pat. No. 3,900,373, which is a continuation-in-part of Ser. No. 272,240, Jul. 17, 1972, abandoned. This application Oct. 22, 1979, Ser. No. 87,200
Int. Cl.³ C25B *1/36, 15/06*
U.S. Cl. 204—99 7 Claims


A
START OF SUBROUTINE A
130
SUBROUTINE A
SET N= 300 (SUBSEQUENT PER SEC FOR FIVE SEC.)
132
READ EACH BUS CURRENT AND STORE IN "OLD" TABLE
134
CLEAR TABLE FOR SUMMATION VALUES AND Δ TABLE
136
FOR I = 1 TO N
138
DONE
160
READ ALL BUS CURRENTS AND STORE IN "NEW" TABLE
140
DIVIDE EACH VALUE IN SUMMATION TABLE BY N AND LEAVE RESULTS STORED IN THE TABLE
142
SUBTRACT OLD VALUES FROM NEW VALUES TO DETECT IS POSITIVE INCREASE, ADD TO Δ TABLE VALUE. IF RESULT IS ZERO OR NEGATIVE, CLEAR THE Δ TABLE VALUE
148
RETURN
B
154
SQUARE EACH VALUE FROM THE Δ TABLE AND ADD TO THE SUMMATION TABLE.
144
REPLACE "OLD" TABLE WITH NEW TABLE
146

1. In an electrolytic cell comprised of adjustable anodes, at least one conductor electrically connected to said anodes, a liquid cathode, at least one secondary conductor electrically connected to said liquid cathode, and an aqueous electrolyte between said liquid cathode and said anodes, wherein voltage is applied across said anodes and said liquid cathode to develop

an electric current which passes sequentially through said conductor, said anodes, said electrolyte, said liquid cathode, and said secondary conductor, characterized by the improved process for detecting an incipient short circuit between said cathode and a specific said anode connected electrically to a specific said conductor which comprises:

(a) obtaining a first conductor current value proportional to current in said conductor, and storing said value in a table of old values,

(b) obtaining the next conductor current value proportional to current in said conductor, and storing said value in a table of new values,

(c) subtracting said first conductor current value from said next conductor current value for said conductor to obtain a first conductor current difference, Δ_a,

(d) when Δ_a is negative or zero, recording zero as the value for Δ_a in said table of old values for said conductor,

(e) when the value of Δ_a is positive, adding this value to any value for said conductor previously recorded in said table of old values to obtain Δ_t,

(f) squaring the value of Δ_t to obtain Δ_s,

(g) adding the value, Δ_s, to any sum previously recorded in said table of old values corresponding to the sum of previous increases for said conductor to obtain a new summation value, Δ_{st},

(h) replacing the conductor current values in the old table with the new conductor current values,

(i) repeating steps (b)–(h), N times over a period of t seconds for said conductor to obtain a new Δ_{st} for said conductor,

(j) dividing said Δ_{st} by N to obtain a quotient, Q, for said conductor, and comparing Q with the conductor current value, and

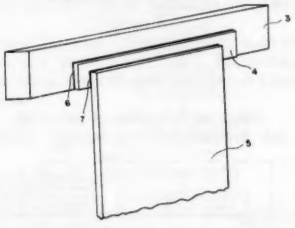
(k) raising said anodes connected to said conductor when Q exceeds a predetermined fraction of the conductor current value.

4,251,337

NOVEL TITANIUM-CONTAINING ELECTRODE AND ELECTROLYTIC PROCESSES EMPLOYING SAME

Newell H. Orr, and Arthur L. Forrest, both of Fairfield, N.J., assignors to Titanium Industries, Fairfield, N.J.

Filed Jun. 8, 1979, Ser. No. 46,601
Int. Cl.³ C25C *1/00, 17/02*
U.S. Cl. 204—105 R **2 Claims**



1. A method of operating an electrolytic cell which comprises the following steps:

(a) preparing an electrode by:

(a_1) explosion bonding a titanium strip to a copper hanger bar to form an explosion bonded metallurgical junction between said titanium strip and copper hanger bar; and

(a_2) fillet welding a titanium sheet to said titanium strip to form a fusion bond weld thereinbetween;

(b) assembling an electrolytic cell comprising an anode and the electrode prepared according to step (a) as a cathode;

(c) further providing an electrolytic solution in said cell comprising a salt of either respectively copper, gold, silver or manganese;

(d) passing an electric current through the electrolytic solution provided in step (c) in said cell; and

(e) recovering respective copper, gold, silver or manganese on the surface of the cathode.

4,251,338

ELECTROLYTIC RECOVERY OF LITHIUM FROM BRINES

Robert L. Retallack, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 7, 1979, Ser. No. 73,353
Int. Cl.³ C25B *1/16;* **C25C** *3/02*
U.S. Cl. 204—130 **8 Claims**

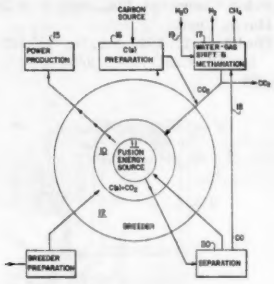
1. In a method of recovering lithium from an aqueous solution, comprising forming insoluble lithium-aluminum oxycompounds, and separating the insoluble lithium-aluminum oxycompounds from the solution, the improvement comprising electrolyzing the lithium containing aqueous solution between an electrode pair having a cathode and an aluminum anode whereby to form insoluble lithium-aluminum oxycompounds.

4,251,339

THERMALLY DRIVEN $C(S)+CO_2 \rightarrow 2CO$ REACTION WITH HIGH ENERGY NEUTRON SOURCES

Charles B. Leffert, Troy; Ralph H. Kummler, Birmingham, and Robert A. Piccirelli, Grosse Pointe Shores, all of Mich., assignors to Texas Gas Transmission Corporation, Owensboro, Ky.

Filed Apr. 16, 1979, Ser. No. 30,715
Int. Cl.³ B01J *19/08*
U.S. Cl. 204—157.1 H **9 Claims**



1. The process of increasing carbon monoxide output in the radiolysis of CO_2 with neutron radiation from a fusion reaction energy, comprising the steps of, mixing solid carbon particles and CO_2, exposing said mixture to neutron radiation developed by said fusion reaction to convert by neutrons impacting the carbon particles C(S) the neutron kinetic energy to thermal energy reaching in the order of above 1000° K. by reaction with said solid carbon particles thereby thermally driving the reactions $C(S)+O_2 \rightarrow CO_2$ and $C(S)+CO_2 \rightarrow 2CO$ and $2CO_2+$ - Radiation and Heat $\rightarrow 2CO+O_2$ thereby to produce a yield of CO, G(CO) in the order of 100.

4,251,340

TERPOLYMERIZATION OF ETHYLENE, SULFUR DIOXIDE AND CARBON MONOXIDE

Richard Johnson, Shirley, and Meyer Steinberg, Huntington Station, both of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 3, 1979, Ser. No. 26,508
Int. Cl.³ C08F *2/46*
U.S. Cl. 204—159.11 **8 Claims**

1. High molecular weight solid terpolymer of ethylene, sulfur dioxide and carbon monoxide, stable to 280° C., containing as little as 36 mol% ethylene units and about 41–51 mol%

sulfur dioxide units, prepared by the irradiation of a liquid and gaseous mixture of ethylene, carbon monoxide and sulfur dioxide, at a temperature of about 10°–50° C., to initiate polymerization, and allowing the polymerization to proceed to its conclusion outside said radiation field.

4,251,341

PHOTOINITIATORS FOR UV-CURABLE SYSTEMS

Louis Felder, Basel; Rudolf Kirchmayr, Aesch, and Andreas Schmidt, Reinach, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 814,366, Jul. 11, 1977, abandoned. This application Jun. 15, 1979, Ser. No. 48,970

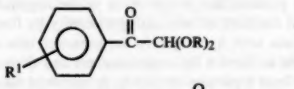
Claims priority, application Switzerland, Jul. 15, 1976, 9087/76

Int. Cl.³ C08F *2/46, 4/00*

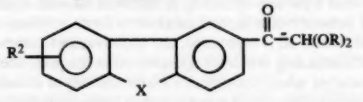
U.S. Cl. 204—159.24 **13 Claims**

1. A photopolymerizable system comprising at least one unsaturated photopolymerizable compound and 0.1 to 20% by weight of a compound of the formulae I or II

I



II

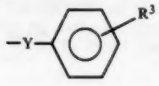


wherein

X represents oxygen or sulphur,

R represents alkyl having 1–4 C atoms, alkoxyalkyl having 3–6 C atoms, C_1-C_4-alkyl-OCH_2—$CH_2OCH_2CH_2$ or chloroalkyl having 2–3 C atoms,

R^1 represents alkyl having 1–4 C atoms, alkoxy or alkylthio having 1–4 C atoms, cycloalkyl having 5–6 C atoms, aralkyl having 7–9 C atoms, chlorine, bromine, a group of the formula —CO—$CH(OR)_2$, or a group of the formula



Y represents a direct bond, oxygen or sulphur,

R^2 represents hydrogen, alkyl having 1–4 C atoms, alkoxy or alkylthio having 1–4 C atoms, chlorine, bromine or a group —CO—$CH(OR)_2$, and

R^3 represents hydrogen, alkyl having 1–4 C atoms, alkoxy having 1–4 C atoms, chlorine, bromine, alkoxycarbonyl having 2–5 C atoms, or a group of the formula —CO—$CH(OR)_2$ as a photoinitiator.

4,251,342

SOLID ELECTROLYTE OXYGEN SENSOR WITH INTEGRAL HEATER

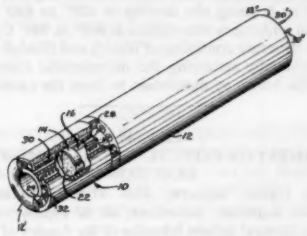
Edward P. Habdas, and Jon D. Aaron, both of Decatur, Ala., assignors to UOP Inc., Des Plaines, Ill.

Filed Jul. 16, 1979, Ser. No. 57,624

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **8 Claims**

1. An oxygen sensor comprising an elongated tubular ceramic body having a central aperture portion and a surrounding wall portion containing at least four spaced apertures, a disc of stabilized solid electrolyte mounted in said central aperture portion in the sensing end of said tubular body and transversely of the axis of said body so that a sensing side can be exposed to a gas to be sensed while a reference side is exposed to a reference gas, electrode means on the opposite sides of said disc and lead means electrically connected to said electrode means and extending to the reference end of said tubular body, electrical resistance heating means mounted in



said at least four apertures in at least the region thereof which is close to, and radially outward of said disc, said heating means being sealed in said apertures in said region and having lead means extending to the reference end of said tubular body through at least two of said spaced apertures.

4,251,343

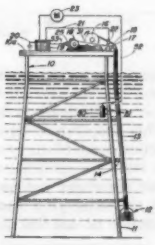
SACRIFICIAL ANODE APPARATUS

Marvin L. Peterson, and Orwin G. Maxson, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Oct. 5, 1979, Ser. No. 82,388

Int. Cl.³ C23F *13/00*

U.S. Cl. 204—197 **6 Claims**



1. A sacrificial anode apparatus for use on a metal structure a portion of which is in water, said apparatus comprising:

(a) a perforated subsurface container for anode material in continuous form,

(b) sacrificial anode material in continuous form extending through a conduit into the container from a source of supply located on the metal structure above water level,

(c) a continuous source of supply for said anode material,

(d) means for providing electrical connection between the anode and the metal structure, and,

(e) means for feeding the anode material to the container in response to the electrochemical potential requirement of the structure being protected.

4,251,344

POROUS NICKEL COATED ELECTRODES

Christopher R. S. Needes, Newark, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 22, 1980, Ser. No. 114,242

Int. Cl.³ C25B *11/06*; B05D *5/12*; H01M *4/98*

U.S. Cl. 204—290 R **7 Claims**

1. A paste composition suitable for application to a substrate said composition consisting essentially of a mixture of solids containing 40 to 80 percent by weight intermetallic aluminum

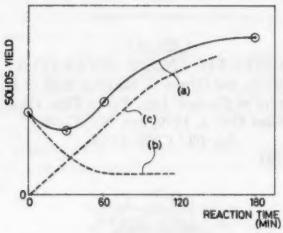
of the formula $NiAl_3$ and 20 to 60 percent by weight intermetallic boron of the formula Ni_3B and an organic liquid vehicle, the solids:liquid vehicle ratio being 4:1 to 8:1.

7. A cathode for use in brine electrolysis cells for the production of chlorine, hydrogen and caustic, said cathode being formed by applying to a substrate a paste composition according to claim 1, firing the coating at 450° to 650° C. in air, sintering in a nitrogen atmosphere at 800° to 900° C. to form a precursor structure consisting of Ni_2Al_3 and $NiAl_2B$ and thereafter substantially removing the intermetallic aluminum and intermetallic boron by dissolution to form the cathode.

4,251,345
METHOD FOR EFFECTING COAL-LIQUEFYING REACTION

Tsugitoshi Ogura, Isahaya; Akio Hiraki, Takadago, and Hikokusu Kajimoto, Hiroshima, all of Japan, assignors to Director-General Seiichi Ishizaka of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed May 11, 1979, Ser. No. 38,121
Claims priority, application Japan, Feb. 8, 1978, 53-12286
Int. Cl.³ C10J *1/00*
U.S. Cl. 208—8 LE **4 Claims**



1. A method of liquefying coal by reaction in a slurry with a solvent comprising mixing coal with a first solvent of a residue of vacuum distillation of petroleum to form a slurry, heating said slurry to a reaction temperature between 390° C. and 430° C. to produce a reaction product slurry and mixing said reaction product slurry with a second solvent rich in aliphatic compounds to adjust the slurry temperature to 370° C. or below to control the coal-liquefying reaction and the thermal polycondensation reaction of said first solvent.

4,251,346
PROCESS FOR COAL LIQUEFACTION

Leonard J. Dry, Robindale; Cornelius Kleynjan, Lochvaal, and Quintin J. Beukes, Sasolburg, all of South Africa, assignors to Sasol One (Proprietary) Limited, Orange Free State, South Africa

Filed Dec. 14, 1978, Ser. No. 969,473
Claims priority, application South Africa, Dec. 21, 1977, 77/7585
Int. Cl.³ C10G *1/06, 1/00, 9/14;* **C01B** *31/00*
U.S. Cl. 208—10 **31 Claims**

1. Process for converting coal directly into predominantly gaseous to liquid products suitable for making hydrocarbon fuel by digesting the coal in a particulate condition at elevated pressure and temperature under hydrogenation conditions, slurried in a solvent or pasting oil for coal and wherein the solvent or pasting oil includes recycled heavy bottoms fraction and a recycled lower boiling fraction, which comprises employing as the solvent or pasting oil, in which the coal is slurried, a solvent system comprising at least 20% by mass of a comparatively low boiling fraction, liquid at room temperature and boiling not higher than 200° C., more than 10% by mass of a high boiling fraction, mostly soidifiable at room temperature, but liquid at the digesting temperature and not more than 30% by mass boiling between 200° and 450° C., maintaining said temperature for digesting above the critical temperature of the components of the low boiling fraction and distillatively fractionating the resulting mixture of solvent system and digestion products, recovering from said fractionating liquid hydrocarbons, those boiling from 200°–450° C. constituting not less than 50% of the total liquid hydrocarbons recovered and recycling from said fractionating to the slurrying stage material comprising a fraction boiling below 200° C. and a bottom fraction.

4,251,347
WHITE MINERAL OIL MADE BY TWO STAGE HYDROGENATION

Maurice K. Rausch, Homewood, Ill.; Henry Erickson, deceased, late of Park Forest, Ill.; by Doris Erickson, executor, Richton Park, Ill.; Gerald E. Tollefsen, Calumet City, and Thomas W. Kelly, Chicago, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

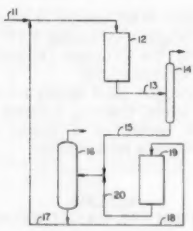
Continuation of Ser. No. 620,610, Oct. 8, 1975, abandoned, which is a continuation-in-part of Ser. No. 459,994, Apr. 11, 1974, abandoned. This application Aug. 15, 1979, Ser. No. 66,610
Int. Cl.³ C10G *65/02*
U.S. Cl. 208—57 **15 Claims**

1. In a process for preparing a white mineral oil from a mineral oil distillate of lubricating viscosity by first contacting said distillate with hydrogen in the presence of a sulfur-resistant catalyst to form a hydrogenated oil and then second contacting at least a portion of said hydrogenated oil with hydrogen in the presence of a second catalyst to form a refined oil from which white oil is recovered, the improvement comprising second contacting said hydrogenated oil in the presence of a second catalyst which comprises a major amount of alumina, a minor catalytically-effective amount of at least one palladium component and a minor amount of at least one halogen component sufficient to improve the activity of said second catalyst, provided that the temperature at which said second contacting occurs is above 450° F. throughout said second contacting.

4,251,348
PETROLEUM DISTILLATE UPGRADING PROCESS

Dennis J. O'Rear, Tiburon, and Jerome F. Mayer, San Anselmo, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 41,209, May 21, 1979, which is a continuation-in-part of Ser. No. 954,062, Oct. 23, 1978, Pat. No. 4,171,257. This application Dec. 26, 1979, Ser. No. 107,231
Int. Cl.³ C10G *11/05, 45/02, 61/02, 65/10*
U.S. Cl. 208—61 **8 Claims**



1. A process for increasing the effectiveness of petroleum processing, comprising:

(A) upgrading a petroleum distillate feed which consists essentially of hydrocarbons having a normal boiling point range in the range of from about 180° to 1200° F., through use of an upgrading process comprising,

(i) producing a process stream containing a C_3–C_4 olefin product fraction in an amount, based upon upgrading feed converted, in the range of from about 2 to 10 weight percent, by contacting said feed with a catalyst comprising a ZSM-5-type crystalline aluminosilicate

zeolite in a form which is substantially free of hydrogenation activity, said contacting being under conditions including (a) a temperature in the range of from about 500° to 800° F.; (b) a pressure below about 13 atmospheres gauge; and (c) a liquid hourly space velocity in the range of from about 0.1 to 20, said feed having a content of nitrogen-containing impurities, calculated by weight as nitrogen, below about 5 ppm;

(ii) producing an upgraded effluent stream by removing the olefin product fraction from said process stream; and

(iii) recovering said upgraded effluent stream; in conjunction with

(B) hydrocracking or reforming a petroleum feedstock.

4,251,349
FIXED-BED REFORMING WITH MID-CYCLE CATALYST ADDITION

Charles S. McCoy, Orinda, and Robert J. Houston, San Rafael, both of Calif., assignors to Chevron Research Company, San Francsico, Calif.

Filed Jun. 4, 1979, Ser. No. 45,534
Int. Cl.³ C10G *35/04, 35/08*
U.S. Cl. 208—64 **6 Claims**

1. In a catalytic reforming process in which a hydrocarbon feedstock and hydrogen are contacted at reforming conditions in a reaction zone having at least a first reactor in which platinum-containing catalyst is disposed in a fixed-bed through which the feedstock and hydrogen flow in a downward direction, the improvement which comprises:

(a) starting on-stream operation of said reforming zone with the catalyst retention volume of said first reactor less than 99 volume % full, and subsequently

(b) charging 0.5 to 30 volume 5 fresh or regenerated platinum-containing catalyst based upon the existing catalyst volume in the reaction zone to the top of the existing catalyst in said first reactor while said reaction zone is maintained on-stream.

4,251,350
HYDROCARBON HYDROTREATING PROCESS

Marvin F. L. Johnson, Homewood, and Henry Erickson, Park Forest, both of Ill., assignors to Atlantic Richfield Company, Philadelphia, Pa.

Division of Ser. No. 955,661, Oct. 30, 1978, Pat. No. 4,202,798, which is a continuation of Ser. No. 559,983, Mar. 19, 1975, abandoned, which is a continuation of Ser. No. 369,265, Jun. 12, 1973, abandoned. This application Nov. 13, 1979, Ser. No. 93,705
Int. Cl.³ C10G *45/08*
U.S. Cl. 208—216 R **4 Claims**

1. In a method for hydrotreating a substantially hydrocarbon feedstock comprising contacting said feedstock in the presence of hydrogen at hydrotreating conditions with a catalyst comprising a major amount of alumina and a minor amount effective to promote hydrocarbon hydrotreating of at least one metal component selected from the group consisting of Group VIB metal components, Group VIII metal components and mixtures thereof, wherein the improvement comprises using a catalyst prepared by the method comprising:

(1) contacting an aqueous slurry consisting essentially of hydrous alumina with at least one phosphorus acid present in an amount sufficient to provide said catalyst with a minor amount effective to increase the hydrocarbon hydrotreating activity of the catalyst of phosphorus and forming a phosphorus-containing hydrous alumina, said phosphorus acid being selected from the group consisting of phosphoric acids, phosphonic acids, phosphinic acids, phosphenic acids, phosphoranic acids, phosphoranedioic acids, phosphoranetrioic acids, phosphoranetetroic acids, phosphoranepentoic acids and mixtures thereof;

(2) calcining said phosphorus-containing hydrous alumina and forming calcined alumina;

(3) contacting said calcined alumina with at least one said metal-containing compound thereby forming a metal-containing material; and

(4) calcining said metal-containing material.

4,251,351
PROCESSING OF CALCIUM CARBONATE MINERALS

Henry T. A. Bowman, St. Austell, England, assignor to English Clays Lovering Pochin & Co., Ltd., Cornwall, England

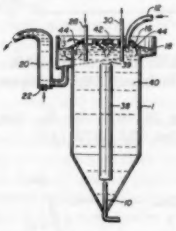
Filed Jul. 24, 1978, Ser. No. 927,360
Claims priority, application United Kingdom, Jul. 27, 1977, 31422/77
Int. Cl.³ B03B *1/04*
U.S. Cl. 209—5 **8 Claims**

1. In a method of preparing a stable, pumpable suspension of a calcium carbonate mineral, the improvement which comprises removing abrasive particles from a deflocculated, concentrated aqueous suspension of the calcium carbonate mineral by centrifuging the suspension at a solids content of at least 65% by weight under conditions such that the product of the residence time of the aqueous suspension in the centrifuge and the acceleration to which the suspension is subjected is at least 12,000 g seconds, whereby the quantity of particles having an equivalent spherical diameter larger than 10 μm present in said suspension is reduced.

4,251,352
INCLINED SEPARATION SCREEN FOR AGITATION TANK

Robert S. Shoemaker, Burlingame, Calif., assignor to Bechtel International Corporation, San Francisco, Calif.

Filed Dec. 28, 1979, Ser. No. 107,809
Int. Cl.³ B03B *5/02*; C22B *3/02*
U.S. Cl. 209—45 **12 Claims**

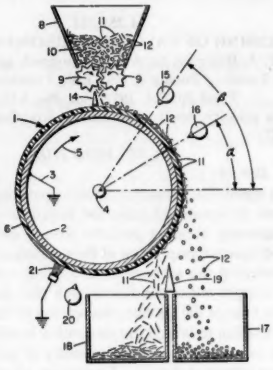


1. In an agitated tank in which a mixture of precious metal-adsorbing charcoal and a ground ore pulp is agitated within the tank by imparting a rolling motion to the mixture, the metal-adsorbing charcoal being retained in the tank and the pulp being expelled over the rim of the tank, the improvement comprising a screen substantially impermeable to the charcoal at least partially circumscribing the rim of the tank and inclined inwardly at an angle of between about 35° and 55° from vertical so that the metal-adsorbing charcoal is washed from the screen by the rolling motion of the mixture in the tank and abrasion of the charcoal against the screen causing loss of charcoal is minimized.

4,251,353
METHOD OF TREATING REFUSE TO SEPARATE VALUABLE CONSTITUENTS

Frank S. Knoll, 4120 Haines St., Jacksonville, Fla. 32206

Continuation-in-part of Ser. No. 852,740, Nov. 18, 1977, abandoned. This application Nov. 13, 1978, Ser. No. 959,753
The portion of the term of this patent subsequent to Jan. 27, 1998, has been disclaimed.
Int. Cl.³ B03C 7/06
U.S. Cl. 209—129 **36 Claims**



1. A method of treating a refuse fraction to separate a desired valuable constituent comprising the steps of:

feeding a particulate refuse fraction particle size of at least about 6 millimeters, a portion of relatively flat particles and a moisture content not exceeding about 20% by weight to a rotating support electrode comprising a grounded, conductive underlayer and a nonconductive overlayer;

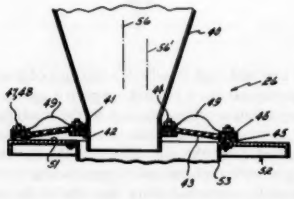
pinning the refuse particles to the rotating support by bombarding the particles on the support in a first zone along the path of rotation of the support with ions from at least one ionizing electrode; and

collecting one particle fraction comparatively poor in the desired constituent particles and another particle fraction comparatively rich in the desired constituent in second and third zones along the path of rotation of the support as the particles separate from the rotating support.

4,251,354
SCREENING MACHINE

William E. Lower, Cincinnati, Ohio, assignor to Rotex, Inc., Cincinnati, Ohio

Filed Dec. 28, 1979, Ser. No. 108,290
Int. Cl.³ B07B 1/28
U.S. Cl. 209—240 **10 Claims**



1. A screening machine having an enclosed movable member including a screen contained within the movable member for grading a particulate material, said enclosed movable member having an inlet orifice and an outlet orifice,

a stationary fixed inlet conduit for supplying particulate material to said inlet orifice of said movable member,

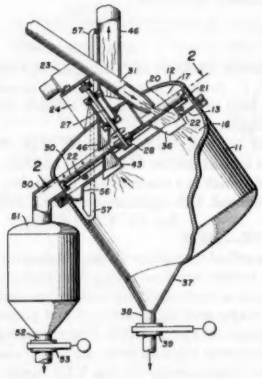
a stationary fixed outlet conduit for transporting graded particulate material away from said outlet orifice of movable member, and

sealing means operable between at least one of said orifices of said movable member and one of said conduits, said sealing means comprising a flat slide surface surrounding said one orifice, said flat slide surface being fixedly secured to one of said movable member or said conduits, a slide element surrounding said one orifice and slideable over said flat surface, and flexible diaphragm means sealingly interconnecting said slide element to one of said movable member or said conduit.

4,251,355
APPARATUS FOR SEPARATING SNAKESKINS AND FINES FROM POLYMERIC PELLETS

Ronald C. Nelson, Chesterfield, and Robert O. Williams, Manchester, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Sep. 6, 1979, Ser. No. 72,953
Int. Cl.³ B07B 1/08, 1/55
U.S. Cl. 209—241 **10 Claims**



1. Apparatus for removing snakeskins and fines from pellets in a collection of polymeric material, comprising:

a. a moving screen

b. a first nozzle positioned to impinge a collection of polymeric material on the screen at a first location, said polymeric material including polymer pellets, snakeskins and fines, said polymeric material being impinged on the screen in a downwardly moving first stream of air in such a manner that said fines pass through the screen at said first location,

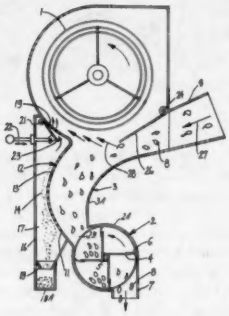
c. a second nozzle positioned to direct a second stream of air upwardly through the screen at a second location for lifting and removing the snakeskins from the screen, and

d. means adjacent to the screen for collecting said pellets.

4,251,356
APPARATUS FOR CLASSIFYING THE CONSTITUENTS OF A PNEUMATICALLY CONVEYED TOBACCO-CONTAINING STREAM

Heinz Harte, Hamburg, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co., KG, Hamburg, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,709
Claims priority, application Fed. Rep. of Germany, Feb. 6, 1978, 2805017
Int. Cl.[3] B07B 7/06
U.S. Cl. 209—250 6 Claims



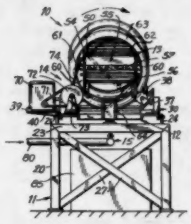
1. Apparatus for classifying the contents of a stream including larger and smaller particles wherein at least the larger particles consist of tobacco, comprising a pneumatic conveyor arranged to transport a stream of particles and a gaseous carrier medium along a predetermined path and having a discharge end; a gas separating device at one side of and communicating with said discharge end to withdraw at least the major part of the carrier medium from said path but to allow the particles to remain in said path; a classifying duct communicating with said discharge end independently of the communication between said discharge end and said separating device to receive the particles from said path and having a perforated wall extending transversely of said discharge end and arranged to intercept said larger particles while permitting the smaller particles to pass therethrough, said wall being disposed opposite said discharge end so that the larger particles enter said duct from said path and are intercepted by said wall; means for evacuating the larger particles from said duct, said separating device comprising a rotary separator located at a level above said wall and said evacuating means, said discharge end of said pneumatic conveyor being substantially tangential to and adjacent said rotary separator; and means for varying the cross-sectional area of said discharge end, including a member immediately adjacent to said gas separating device and extending into said duct.

4,251,357
SLUICE CONSTRUCTION

Winston F. Wright, 2060 Fair Cir., Reno, Nev. 89503

Filed Jul. 16, 1979, Ser. No. 57,751
Int. Cl.[3] B03B 5/12
U.S. Cl. 209—437 3 Claims

1. Improved sluice construction for placer type mining, comprising: an elongated frame of generally H-shaped cross-section, including a floor member and first and second side walls interconnected by said floor member, to form first and second parallel channels; a first set of riffles extending laterally between said side walls in said first channel, and a second set of riffles extending between said side walls in said second channel; means supporting said elongated frame for selective intermittent rotation about its own axis to expose one of said channels in an upwardly facing orientation; and means for directing a stream of liquid against the riffles in the downwardly facing

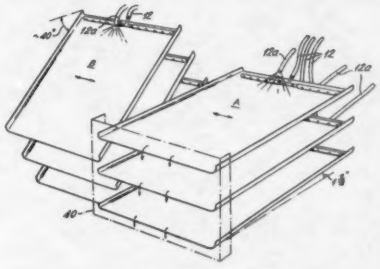


other of said channels whereby one of said channels may be flushed while the other is in use.

4,251,358
SAND SEPARATOR

Richard H. Mozley, Falmouth, England, assignor to National Research Development Corporation, London, England

Continuation-in-part of Ser. No. 888,994, Mar. 22, 1978, abandoned. This application May 25, 1979, Ser. No. 42,335
Claims priority, application United Kingdom, Mar. 25, 1977, 12655/77; May 31, 1978, 25900/78
Int. Cl.[3] B03B 5/04
U.S. Cl. 209—437 15 Claims



1. A method of separating particles of different densities, comprising the steps of:

(1) supplying a flowing suspension of the particles in a liquid to the upper regions of the decks of a separator comprising means for supplying particles to be separated, in the form of a flowing suspension in a liquid to two sloping surfaces; means for mounting said two sloping surfaces side-by-side with their sloping directions parallel and arranged to perform a repetitious, non-discontinuous horizontal motion generally orthogonal to their slope; means for draining the lower ends of said sloping surfaces into separate collecting means; and means for imparting said horizontal motion to said sloping surfaces by a positive drive means causing the motion to follow a path independent of the weight on the surfaces and applying said motion to said sloping surface in a first phase during which one surface receives the suspension containing the particles to be separated while the other surface receives at a comparable rate the suspending liquid without particles, followed by a change in shear conditions on said other surface to flush off the particles still remaining on it, and a second phase during which said surfaces reverse roles, the two phases alternating, so that the collecting means separate different time-intervals of particles draining into them;

(2) causing the decks to perform a repetitious, smooth horizontal motion generally orthogonal to their slope, and

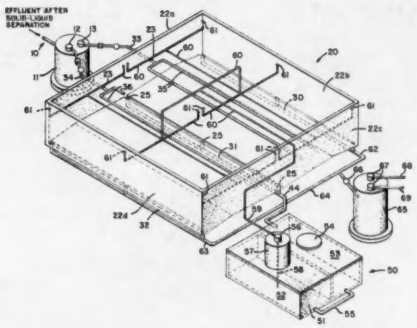
(3) causing the separator to follow a cycle of operations, with the motion applied to the surfaces throughout, in a first phase of which one surface is receiving the suspension while the other surface receives at a comparable rate the suspending liquid without particles, followed by a change in shear conditions on that other surface to flush off the particles still remaining on it, the second phase being a reversal of roles of the surfaces, the two phases alternating, the collecting arrangements separating different time-intervals of particles draining into them.

4,251,359

ON-SITE WASTEWATER TREATMENT SYSTEM

Gary R. Colwell, and Luther Freeman, both of Eugene, Oreg., assignors to C_2F Investment Company, Veneta, Oreg.

Filed May 21, 1979, Ser. No. 40,715
Int. Cl.³ C02F *3/30*
U.S. Cl. 210—605 **21 Claims**



1. A method for treatment of wastewater comprising:

effecting solid-liquid separation of the gravity settleable solids portions of the wastewater to give an anaerobic effluent,

distributing the anaerobic effluent with the solids removed into and beneath the upper surface of a bed comprising particles of media conducive to the growth and maintenance of aerobic soil organisms at a rate sufficient to allow the media to retain the effluent therein for a first retention time before displacement by additional effluent and gravity,

collecting the displaced aerobically treated effluent from the media,

distributing the collected and displaced effluent evenly over the same bed of media for retention within the media a second retention time sufficient for the aerobic bacteria in the media to substantially reduce the bacterial count of the wastewater before displacement by additional effluent and gravity, the collected and displaced aerobically treated effluent containing dissolved oxygen and carrying free oxygen with it into the media for use by aerobic bacteria contained therein, and

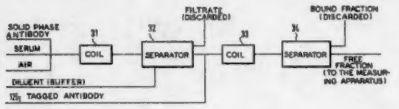
collecting and discharging the aerobically treated effluent displaced a second time from the media.

4,251,360

METHOD AND APPARATUS FOR THE DETECTION OF A SPECIFIC BINDING PROTEIN

David J. Goldie, 1 Radnor Rd.; Adel Abbas A. Ismail, 43 Old Sneed Rd., and Peter M. West, 6 York Gardens, all of Bristol, England

Continuation of Ser. No. 833,617, Sep. 15, 1977, abandoned. This application Jul. 2, 1979, Ser. No. 53,887
Claims priority, application United Kingdom, Sep. 18, 1976, 39018/76; Fed. Rep. of Germany, Aug. 12, 1977, 2736527
Int. Cl.³ B01D *13/00*
U.S. Cl. 424—1.5 **12 Claims**



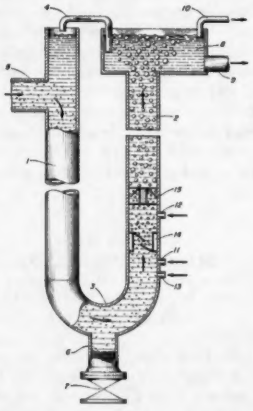
1. Method for the detection and for the determination of one component of the reaction between a specific binding protein and the corresponding bindable substance by the use of the binding affinity of these components for one another, in an automated system having a continuously flowing liquid stream, comprising introducing mixtures of sample material with (a) a determined amount of one component of the reaction in tagged form and (b) another, carrier-bound, component successively into said liquid stream by means of a fluid which is substantially non-miscible with said liquid stream so that the individual mixtures remain separate, incubating the mixtures, continuously introducing same into a separator and separating therein at least a portion of the liquid phase from the solid phase by filtration, and measuring the amount of the tagged component in one of the separated phases as a measure of the unknown component to be detected.

4,251,361

HYBRID GAS FLOTATION SEPARATOR

R. Leroy Grimsley, Ponca City, Okla., assignor to Conoco, Inc., Ponca City, Okla.

Filed Nov. 13, 1979, Ser. No. 93,716
Int. Cl.³ C02F *1/24*
U.S. Cl. 210—703 **7 Claims**



1. A gas flotation apparatus for separating hydrocarbon/water mixtures comprising

(a) a first vertically elongated enclosed portion containing a liquid inlet means,

(b) a second vertically elongated enclosed portion, said

portion containing an air inlet means near the lower end of said portion, a chemical injection means above said air inlet means, and a static mixer means above said chemical injection means, and wherein both first and second vertically elongated enclosed portions are from about 30 to about 150 feet in length;

(c) an enclosed connecting means between said first and said second elongated enclosed portion;

(d) a flotation chamber at the upper end of and in fluid communication with said second elongated enclosed portion, said chamber having a lower aperature to discharge substantially oil-free water and an upper aperature or weir to discharge oil.

4,251,362

METHOD OF, PRODUCTS AND DEVICES FOR PROCESSING POLLUTING MATERIALS SUCH IN PARTICULAR AS HYDROCARBONS CAST UP BY THE SEA, WASTE SLUDGES

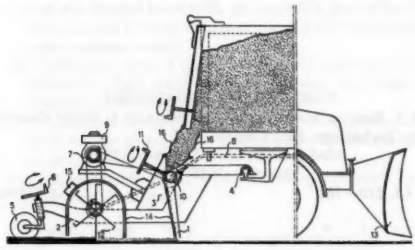
Etienne Tillie, Route de Saint Paul, 06480 La Colle sur Loup, France

Filed May 29, 1979, Ser. No. 43,238

Claims priority, application France, May 30, 1978, 78 16009; Oct. 17, 1978, 78 29532; May 18, 1979, 79 12702

Int. Cl.³ C02F *1/00*

U.S. Cl. 210—705 **14 Claims**



1. Method of removing and recovering liquid sheets of hydrocarbon pollutants from the surface of the sea or present on coastal beaches or shores, residual sludges or waste waters, which comprises contacting said liquid sheets of hydrcarbon pollutants with, as hydraulic binder, calcium sulphate semihydrates in ALPHA quadratic form, wherein the same quickly sets, hardens, sequesters and retains said hydrocarbon pollutants in a form which is sufficiently firm to make it easily workable and recoverable.

4,251,363

ANIONIC POLYMERIC FLOCCULANT COMBINATIONS FOR SETTLING PHOSPHATE SLIMES

Ralph J. Chamberlain, Stamford, Conn., and Richard E. Ellwanger, Tucson, Ariz., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 27,626, Apr. 6, 1979, abandoned, which is a continuation of Ser. No. 833,320, Sep. 14, 1977, abandoned. This application Sep. 11, 1979, Ser. No. 74,464

Int. Cl.³ C02F *1/56*

U.S. Cl. 210—727 **7 Claims**

1. A process for settling solids of the slimes arising from phosphate mining and processing which comprises first adding to and mixing with said slimes an effective amount of a first acrylamide/acrylic acid copolymer flocculant having a molecular weight of about 50,000 to 500,000 and a weight percent of acid groups or soluble salts thereof of about 60 to 100 so as to form flocs which remain suspended, then adding to and mixing with said slimes an effective amount of a second acrylamide/acrylic acid copolymer flocculant having a molecular weight of at least about 2,000,000 and a weight percent of acid groups or soluble salts thereof of about 20 to 60 to form settleable flocs, the weight ratio of said first to said second copolymer being from about 2:1 to 1:2, and thereafter settling the flocs thus formed.

4,251,364

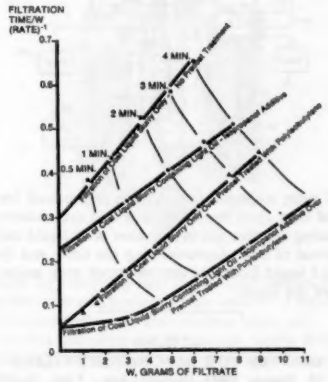
FILTRATION OF A COAL LIQUID SLURRY USING POLYISOBUTYLENE

Norman L. Carr, Allison Park, and Edgar L. McGinnis, Gibsonia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed May 7, 1979, Ser. No. 36,854

Int. Cl.³ B01D *37/02*; C10G *1/04*

U.S. Cl. 210—777 **14 Claims**



1. A process for filtering a coal liquid slurry produced in a process for dissolving hydrocarbonaceous fuels from coal with a solvent and containing hydrocarbonaceous liquid and suspended coal minerals comprising adding polyisobutylene to said slurry in an amount which increases the rate of filtration thereof, and then filtering said slurry.

8. A process for increasing the rate of filtration of a coal liquid slurry produced in a process for dissolving hydrocarbonaceous fuels from coal with a solvent and containing hydrocarbonaceous liquid and suspended coal minerals comprising depositing a precoat cake of filter aid on a filter element, passing a solution of polyisobutylene in hydrocarbonaceous oil through said precoat cake, and then filtering said slurry through said precoat cake.

4,251,365

LOW ENERGY GAS TRANSFER SYSTEM

Richard E. Speece, 472 Sharon Dr., Wayne, Pa. 19087

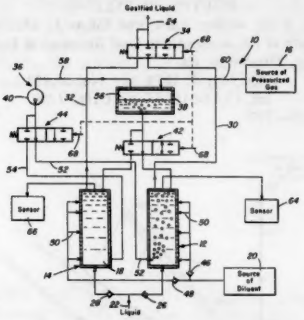
Filed Apr. 13, 1979, Ser. No. 29,972

Int. Cl.³ C02F *1/74*; B01D *19/00*

U.S. Cl. 261—121 R **13 Claims**

1. In combination with a source of compressible fluid, apparatus for transferring said fluid to a relatively incompressible fluent material flowing in a conduit under a first pressure, including at least one chamber device connected to the conduit within which said fluent material is saturated with said fluid under a second and different pressure, flow control means connecting said chamber device to the conduit for displacing saturated fluent material completely filling the chamber during spaced intervals of time under said first pressure of the fluent material in said conduit, pump means inducing flow of the fluid alone for injecting the fluid into the fluent material within the chamber device under said second pressure, closed circuit means connecting the pump means to the chamber device for recirculating the fluid therethrough under said second pressure, and means for limiting said recirculation of the fluid to periods between said spaced intervals of time.

12. A method of gasifying a liquid flowing under a relatively low pressure with a gas under a relatively high pressure, including the steps of: collecting a predetermined quantity of said liquid within a pressure sealed zone; injecting said gas into the same zone for absorption by the liquid; recirculating said gas through said zone under said high pressure for a limited



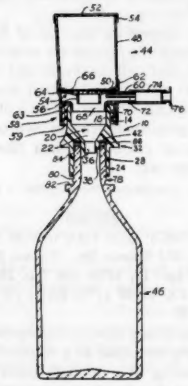
period of time; maintaining said zone pressurized for a short interval of time upon termination of said recirculation of the gas; replacing any free gas in said zone with liquid during said short interval of time; depressurizing the zone; and displacing the gasified liquid from said depressurized zone under the low pressure of the liquid.

4,251,366

ADAPTER FOR LABORATORY FILTER

Timothy M. Simon, 2801 Rutgers Ave., Long Beach, Calif. 90815, and Dennis H. Kunishima, 663 Winslow, Long Beach, Calif. 90814

Filed Jun. 18, 1979, Ser. No. 49,444
Int. Cl.³ B01D *35/00*
U.S. Cl. 210—767 **8 Claims**



8. A method of collecting liquid filtrate for storage utilizing a laboratory filter unit having a transverse filter, a downwardly opening outlet below said filter comprising an outer sleeve with a flexible seal disposed therewithin and with an annular guide located concentrically therewithin, and also utilizing a liquid storage container having an externally threaded upwardly opening mouth, and an adapter consisting essentially of an annular neck with a smooth outer surface and having a downwardy and radially inwardly sloped funnel section terminating in a cylindrical edge which is undercut sharply upwardly and outwardly in an inclined frusto conical surface, and spaced outwardly from said funnel section there is a collar threaded internally at its lower extremity and located beneath said neck, said funnel section and said collar defining a transversely downwardly disposed ledge in the space therebetween, and an annular fluid tight sealing gasket is located in the space between said funnel section and said neck in fluid tight engagement with said ledge, comprising:

sliding said adapter into engagement with said filter unit with said adapter neck extending into said filter unit opening outlet and with said flexible seal residing in contact with the smooth outer surface of said adapter neck,

threadably engaging said adapter unit collar with said mouth of said storage container so that the end of said mouth of said storage container compresses and bears against said fluid tight sealing gasket,

exerting a vacuum on said laboratory filter unit below said transverse filter to draw a liquid to be filtered through said filter unit while sealing said adapter unit against contamination at said flexible seal and at said gasket, and

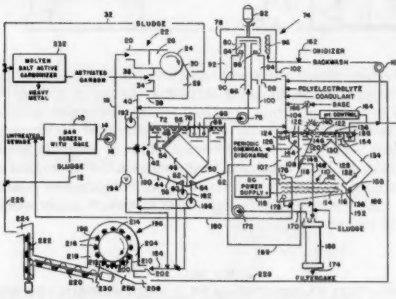
collecting the filtrate of said filter unit in said storage container, and subsequently measuring the bacterialogical content of said filtrate.

4,251,367

WASTEWATER TREATMENT

Scott A. Santora, Hammonton, N.J., assignor to Waste Conversion Technology, Inc., Camden, N.J.

Filed Jan. 25, 1979, Ser. No. 6,271
Int. Cl.³ C02F *9/00*
U.S. Cl. 210—702 **5 Claims**



1. A wastewater treatment process comprising the steps of:

separating coarse solids from wastewater to produce a first product substantially free of coarse solids;

effecting thickening of the remaining fine solids to produce a second product consisting essentially of fine solids and water, and a third separate product consisting essentially of water with a proportion of fine solids substantially less than the proportion of fine solids in the second product;

passing the second product through a first fine particle screen to separate solids from water in said second product while continuously cleaning said first screen by mechanical means;

passing the third product through a second fine particle screen, thereby separating fine solids from water in said third product; and

recovering, as a final product, a liquid comprising substantially all of the water produced in both of said passing steps.

4,251,368
CYCLONE SEPARATOR

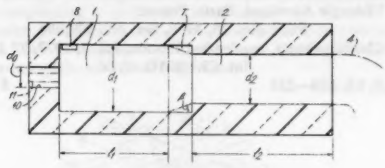
Derek A. Colman, Lordswood, and Martin T. Thew, Bitterne, both of England, assignors to National Research Development Corporation, London, England

Filed May 24, 1979, Ser. No. 42,226

Claims priority, application United Kingdom, May 31, 1978, 25883/78

Int. Cl.³ B04C 5/081

U.S. Cl. 210—788 **14 Claims**



1. A cyclone separator, having:

an internally generally cylindrical first portion with a plurality of substantially equally-angularly spaced tangentially directed feeds, and,

axially adjacent to the cylindrical first portion but for an annular transitional internal surface means providing a step and coaxial therewith, an internally generally cylindrical second portion open at its far end thereby providing a denser-phase outlet,

the cylindrical second portion being characterized by the absence of feed inlets except over said step from said cylindrical first portion,

the cylindrical first portion having an axial overflow outlet for less dense phase at its far end distally of the cylindrical second portion,

the internal shape of the separator being governed by the following relationships:

$$15 \leq l_1/d_1 \leq 40$$

$$0.1 \leq 4A_i/\pi d^2_1 \leq 0.2$$

$$0.1 \leq d_0/d_1 \leq 0.25$$

$$1.2 \leq d_1/d_2 \leq 3,$$

the internal diameter of the axial overflow outlet being d_0, the internal diameter of the cylindrical first portion being d_1, and of the cylindrical second portion being d_2, and of which the internal length of the cylindrical first portion is l_1 and of the cylindrical second portion is l_2, the total cross-sectional area of all said feeds measured at the point of entry normal to the inlet flow being A_i.

4,251,369
RADIAL DESIGN SUBMERGED COALESCER FOR SEPARATION OF LIQUIDS

Burton M. Casad, and R. Leroy Grimsley, both of Ponca City, Okla., assignors to Conoco, Inc., Ponca City, Okla.

Filed Jun. 11, 1979, Ser. No. 47,400

Int. Cl.³ B01D 17/04

U.S. Cl. 210—104 **6 Claims**

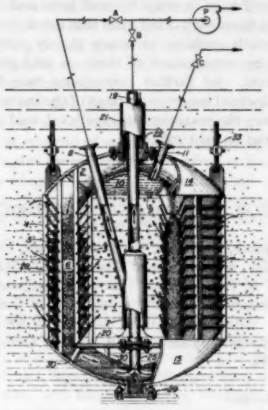
1. A coalescer for separating entrained aqueous hydrocarbons from aqueous media, said coalescer being submerged in said media, comprising

(a) an inner chamber having an outer wall,

(b) an outer chamber surrounding said inner chamber and having an outer wall, the inner wall of said outer chamber being common with said outer wall of said inner chamber, said walls formed of retaining means said means being vertically aligned frusto-conical members set at opposing angles;

(c) said retaining means retaining particulate coalescing materials in said outer chamber while allowing fluid communication from said aqueous media through the outer chamber and into said inner chamber,

(d) sensing means for detecting the level of an upper hydrocarbon layer in said inner chamber, said means being connected to



(e) means for removing said upper hydrocarbon layer and together with said sensing means capable of maintaining a fixed volume of upper hydrocarbon layer, and

(f) a conduit for removal of aqueous media from which substantially all hydrocarbons have been removed.

4,251,370
DEVICE FOR BIOLOGICAL DIGESTION OF SEWAGE

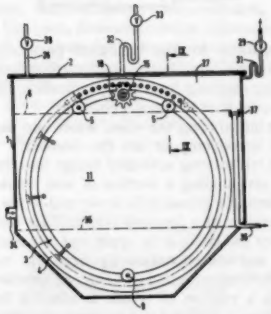
Volker Stengelin, Josef-Haydn-Str. 11, Tuttlingen, Fed. Rep. of Germany

Filed Jun. 26, 1979, Ser. No. 52,201

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1978, 2827996

Int. Cl.³ C02F 3/08

U.S. Cl. 210—150 **11 Claims**



1. A device for the biological digestion of sewage comprising:

(a) a gas-tight container;

(b) at least one rotationally symmetric immersion cylinder supported for rotation within the container,

(c) a plurality of immersion growth surfaces mounted to said immersion cylinder; and

(d) drive means for rotating said immersion cylinder, wherein said immersion cylinder comprises a supporting ring on one side and a drive ring on another side thereof,

said rings being connected to each other by support rods distributed evenly around the periphery of the cylinder and between which rods the growth surfaces are attached, and wherein the drive means comprises a drive pinion mounted above a maximum sewage level, and the drive ring comprises two sheet iron rings on edge which are connected to each other by stud bolts and which are at a distance from each other such that the drive pinion causes the growth surfaces to rotate slowly when the pinion rotates by engagement of teeth on said pinion with the stud bolts, and further comprising two flanged guide rollers located inside outer rings of the immersion cylinder and above the maximum sewage level, said cylinder being supported on said rollers.

4,251,371

DEVICE FOR THE BIOLOGICAL PURIFICATION OF WASTE WATER

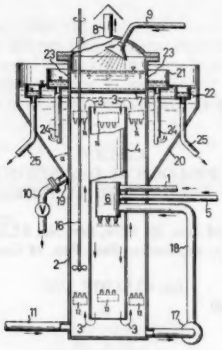
Alexander Bauer, Kelkheim; Gerhard Leistner, Schmitten; Gerhard Müller, Kelkheim, and Günther Sell, Hattersheim am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Feb. 8, 1979, Ser. No. 10,536

Claims priority, application Fed. Rep. of Germany, Feb. 11, 1978, 2805794

Int. Cl.[3] **C02F** *3/22*

U.S. Cl. 210—197 **9 Claims**



2. An apparatus for the biological purification of waste water and for the degasification and clarification of a sludge-water mixture resulting from said purification, including:

a reactor container defining a chamber;

means for introducing the waste water into the chamber;

means for introducing air into the chamber;

means for introducing activated sludge into the chamber;

a jacket, surrounding a portion of said reactor container, being sealingly joined at its lower end to the periphery of the container at a location intermediate the ends of the container and being at its upper end substantially concentric to and spaced outwardly from the container, said jacket defining with said container an annular space therebetween a portion of which is adapted for settling of sludge from a sludge-water mixture occupying said space;

a guide element disposed within said chamber and adapted for inducing a loop-shaped flow in sludge-water mixture in the chamber;

an inlet element disposed about said container in the annular space and adapted for receiving sludge-water mixture from said chamber;

means for introducing sludge-water mixture from said chamber into the inlet element;

means for discharging sludge-water mixture from said inlet element into the settling portion of said annular space wherein sludge from the mixture settles toward the bottom of said space thereby separating from the effluent of said mixture;

an outlet trough disposed about said reactor container in the annular space and adapted to receive said effluent; and

means for discharging effluent from said trough to a location outside said apparatus.

4,251,372

MAGNETIC FILTER WITH PERMANENT MAGNETS

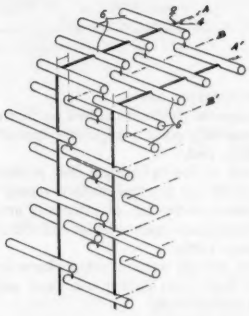
Lucien Dolle, Palaiseau, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 28, 1978, Ser. No. 920,054

Claims priority, application France, Jul. 8, 1977, 77 21084

Int. Cl.[2] **B01D** *35/06*

U.S. Cl. 210—222 **5 Claims**



1. A magnetic filter of the type having a plurality of permanent magnets disposed in a pipe traversed by a fluid to be filtered, said filter having at least one filtering section comprising a system of coparallel plates disposed in said pipe parallel to the fluid outflow direction, each said plate supporting a plurality of magnetized bars, each said bar magnetized along its respective longitudinal axis and disposed perpendicular to said plates, and all said bars supported by a common said plate having like magnetic poles on the same side of said common plate, the poles of the magnetized bars supported by the same plate being disposed such that adjacent bars are staggered relative to one another in the direction parallel to the outflow and in the direction perpendicular to the outflow and parallel to the plane of the plate, the points at which the magnetized bars are fixed to a common plate being distributed over a plurality of lines lying in the plane of said plate and parallel to the fluid outflow direction, adjacent said lines being staggered relative to one another, the distribution of the magnetized bars on each supporting plate having a double spatial periodicity, a first periodicity in the outflow direction, and a second periodicity in the direction perpendicular to the outflow, and two adjacent said plates being so arranged relative to one another that each magnetized bar supported by one of the two plates is disposed downstream, in the fluid outflow direction, of the closest magnetized bar supported by the other of the two plates.

4,251,373

SQUEEZE-FILTER PLATE FOR USE IN FILTER PRESS

Masayuki Nakamura, Osaka, Japan, assignor to Kurita Machinery Manufacturing Co., Ltd., Osaka, Japan

Filed Apr. 10, 1979, Ser. No. 27,017

Claims priority, application Japan, Dec. 21, 1978, 53-159047

Int. Cl.[3] **B01D** *25/32, 25/00*

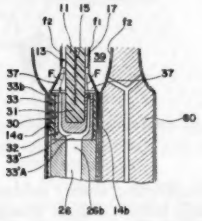
U.S. Cl. 210—225 **7 Claims**

1. A squeeze-filter plate for use in such a filter press as to squeeze a cake of solid substances contained in a slurry to be filtered which is built up between a pair of filter webs covering a filtration room defined by and between the squeeze-filter

plate and a filter plate positioned adjacent to and on one side remote from the squeeze-filter plate, said squeeze-filter plate comprising;

a diaphragm means made of resilient material and having a central portion and an outer peripheral portion of a larger thickness than the thickness of said central portion, said diaphragm means further having a hollow space defined in said central portion, said hollow space being adapted to receive a pressurized fluid from a source of the pressurized fluid and flow guide means formed on each of a pair of the opposed surfaces of said diaphragm at a portion corresponding to said central portion;

said outer peripheral portion of the diaphragm means having at a least one aperture defined therein and a solid plug portion positioned in said aperture;



a frame made of rigid material surrounding and supporting said outer peripheral portion of said diaphragm means, said frame having at least one passage one end of which is connected to a collecting duct while the other end thereof is opened at one surface of said frame facing said peripheral portion of said diaphragm means; and

at least one socket member housed in said aperture in said outer peripheral portion of the diaphragm means for defining at least two discharge passage each extending therethrough from a space defined between one of the filter webs and one of the opposed surfaces of the central portion of said diaphragm means which faces said one of the filter webs to one end of said passage in said frame for the discharge of the filtered medium from said flow guide means towards said collecting duct.

4,251,374

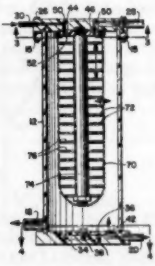
INTERCHANGEABLE FILTER APPARATUS

Noble Cunningham, Rte. #9, Mansfield, Ohio 44904

Filed Jul. 20, 1979, Ser. No. 59,427

Int. Cl.[3] **B01D** *27/00*

U.S. Cl. 210—232 **9 Claims**



1. A filter apparatus capable of being converted into a bag filter, a sleeve and disc filter, a cartridge filter, an adsorption column, and an ion exchange column comprising the combination of

a filter housing tank,

a base connected to said tank and having at least one opening therein for the passage of liquids and at least one opening for the passage of air into said tank, and

a cover releasably attached to said tank and having at least one opening therein for the passage of liquids and at least one opening for the passage of air into said tank and further including an adapter means attached to the underside of said cover specifically adapted to interchangeably receive at least two of the following elements:

(a) a filter bag including a body portion with an opening at its top forming a mouth and means to secure said bag to said adapter means,

(b) a sleeve and disc filter comprising a shaft, a plurality of spaced, perforated circular discs mounted on said shaft, means on one end of said shaft for securing said shaft to said adapter means, and a filter bag including a body portion adapted to be fitted over said shaft and plurality of discs and an opening at its top forming a mouth adapted to be secured to said adapted means,

(c) a cartridge filter arrangement including a base support member having a plurality of vertically upwardly projecting studs, a top support member having a plurality of vertically downwardly projecting hollow studs extending through said member, a plurality of generally cylindrical filter elements having hollow cores, said studs in said support members engaging the respective ends of said filter elements by extending into said hollow cores, and means securing said top and bottom support members to said filter element and said adapter means,

(d) a tubular, hollow filter element having a rigid lattice covered by a layer of filter material, one end of said element being closed and the other end of said element being open and having means to secure said filter element to said adapter means, and

(e) strainer means, including means to secure said strainer means to said adapter means, for preventing the loss of ion exchange resin from said tank when said apparatus is being used as an ion exchange column;

said adapter means having at least one passage therethrough for providing a fluid connection between said openings in said cover and said elements (a) through (e).

4,251,375

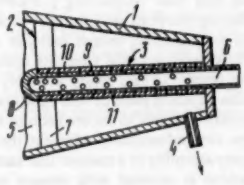
FILTERING APPARATUS

Viktor I. Pakki, Krasnoshkolnaya naberezhnaya, 18, kv. 132; Chingiz S. Guseinov, Krasnoshkolnaya naberezhnaya, 18, kv. 249; Sabir Y. Bogdanovich, prospekt Lenina, 41/43, kv. 156, and Petr D. Guzhin, ulitsa Sumskaya, 77/79, kv. 39, all of Kharkov, U.S.S.R.

Filed Apr. 12, 1979, Ser. No. 29,324

Int. Cl.[3] **B01D** *29/20*

U.S. Cl. 210—304 **12 Claims**



1. A filtering apparatus comprising:

a hollow casing formed as a solid or revolution and having an inlet and an outlet;

a spinner positioned at the inlet of said casing and adapted to impart rotary motion within said casing to a fluid being purified;

a hollow filter element closed at one end, and positioned

coaxially within said casing to define together with said casing a space tapering from the inlet toward the outlet; and said filter element further being snugly fit with the open end thereof in the outlet and comprising

a perforated frame, and

a covering of a water-repellent polymeric foam material applied to said perforated frame;

a discharge connection piece attached to the lower portion of said casing and adapted for removal of the impurities that have been separated from the fluid being purified; and the ratio between diameters of said casing and said filter element is from 2 to 3 at the inlet of said casing, and from 1 to 2 at the outlet thereof.

4,251,376

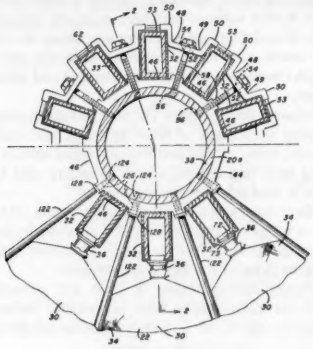
FILTER

Charles L. Badino, Mexico, Mo., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Continuation of Ser. No. 773,583, Mar. 2, 1977, Pat. No. 4,169,794. This application Mar. 1, 1979, Ser. No. 16,584

Int. Cl.³ B01D *33/02*

U.S. Cl. 210—331 **9 Claims**



1. In a rotary disc filter apparatus wherein a rotary assembly is supported for axial rotation by an elongated shaft portion thereof and includes filter element support means cooperable with said rotary assembly to support plural filter element segments with respect to said rotary assembly for rotation therewith, and wherein a flow conducting means communicates in fluid flow conducting relation with such filter element segments and includes a plurality of elongated, flow conducting portions carried by said rotary assembly and spaced circumferentially thereof in a manner to extend generally axially of said shaft portion, the improvement comprising: securing means engageable with said flow conducting portions for securing said flow conducting portions with respect to said rotary assembly wherein said securing means includes a plurality of circumferentially spaced securing elements selectively releasably affixed with respect to said rotary assembly circumferentially intermediate adjacent pairs of said flow conducting portions and selectively operable to secure each of said flow conducting portions circumferentially adjacent thereto with respect to said rotary assembly in a manner that each of said flow conducting portions is secured with respect to said rotary assembly by the pair of said securing elements circumferentially adjacent thereto; and said pair of securing elements securing any one of flow conducting portions being selectively releasable from said one of said flow conducting portions while the said flow conducting portions circumferentially adjacent to said one flow conducting portion are maintained secure with respect to said rotary assembly by means including others of said circumferentially spaced securing elements.

4,251,377

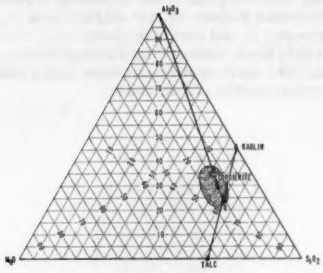
SEPARATION DEVICE OF CORDIERITE CERAMIC AND α-ALUMINA

Henry M. Schleinitz, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 28, 1979, Ser. No. 70,393

Int. Cl.³ B01D *31/00, 13/00*

U.S. Cl. 210—510 **1 Claim**



1. In a self-supporting, unitary structure comprising rigid, porous, inorganic hollow filament arranged in a three-dimensional network of hollow filament, the hollow filament defining tortuous paths for fluid passing through the network, the improvement wherein the inorganic hollow filament comprises complementarily about from 5 to 50% cordierite ceramic and about from 95 to 50% α-alumina, the α-alumina being in excess of the stoichiometric proportion needed to form the cordierite ceramic.

4,251,378

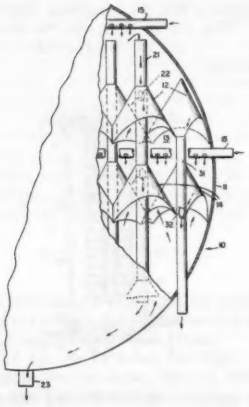
GRAVITY SETTLING

Andre A. Simone, Denville; Dennis F. Ogren, Verona; William R. Adams, Upper Montclair, and Harold B. Kohn, Cedar Grove, all of N.J., assignors to The Lummus Company, Bloomfield, N.J.

Division of Ser. No. 959,646, Nov. 13, 1978, Pat. No. 4,196,080. This application Oct. 1, 1979, Ser. No. 80,418

Int. Cl.³ B01D *21/10*

U.S. Cl. 210—522 **6 Claims**



1. A gravity settling apparatus, comprising:

a housing;

a plurality of vertically spaced separate single gravity settling stages defined between a plurality of vertically

spaced horizontal layers arranged in the housing, each layer comprising a plurality of hollow conically shaped members, said conically shaped members having their axes positioned substantially vertical, with the apexes above the base;

fresh feed inlet means for separately introducing fresh feed liquid containing solids into each of said vertically spaced separate gravity settling stages;

overflow outlet means for withdrawing clarified liquid from the uppermost portions of each of said vertically spaced separate gravity settling stages; and

underflow outlet means for withdrawing liquid containing solids from the lowermost portions of each of said separate gravity settling stages, each of said single gravity settling stages being effective to provide for essential completion of gravity settling therein.

4,251,379

DETERGENT-DISPERSANTS OF HIGH ALKALINITY FOR LUBRICATING OILS AND PROCESS FOR THEIR PREPARATION

Jean-Louis Le Coent, Le Havre, and Bernard Demoures, Puteaux, both of France, assignors to Orogil, Courbevoie, France

Filed Jan. 26, 1979, Ser. No. 6,866
Claims priority, application France, Feb. 8, 1978, 78 03464
Int. Cl.³ C10M *1/20, 1/40*
U.S. Cl. 252—33 **26 Claims**

1. A process of preparing a detergent-dispersant from an alkaline-earth metal alkylbenzene sulfonate, an alkylphenol, an alkaline-earth base, an alkylene glycol, sulfur, and carbon dioxide, which process comprises:

(1) reacting sulfur at a temperature between about 100° and 190° C., with an alkylphenol bearing one or more C_6–C_{60} alkyl substituents, in the presence of a dilution oil, an alkaline-earth metal alkylbenzene sulfonate of a molecular weight of more than about 300, and a T.B.N. less than or equal to 170, a base derived from an alkaline-earth metal, and an alkylene glycol, the amount of alkylphenol used being between about 5 and 35 parts by weight per 100 parts by weight of alkylphenol/alkylbenzene sulfonate mixture, and the amount of alkylbenzene sulfonate being between 95 and 65 parts by weight to 100 parts by weight of alkylphenol/alkylbenzene sulfonate mixture;

(2) precarbonating the resultant mixture at a temperature of between about 100° and 250° C., with carbon dioxide;

(3) superalkalinizing and carbonating the resultant precarbonated mixture by means of a base selected from among the alkaline-earth metal oxides and hydroxides and of carbon dioxide in the presence of an alkylene glycol at a temperature of between about 100° and 250° C.; and

(4) eliminating the excess alkylene glycol and recovering the resultant detergent-dispersant of high alkalinity.

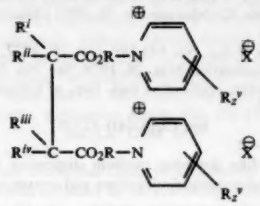
4,251,380

QUATERNARY AMMONIUM DIESTER SALT COMPOSITION AND HYDROCARBON OIL CONTAINING SAME

Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

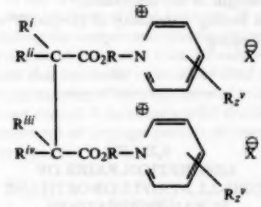
Filed Jun. 28, 1979, Ser. No. 53,010
Int. Cl.³ C10M *1/32*
U.S. Cl. 252—34 **33 Claims**

1. A quaternary ammonium diester salt composition represented by the formula:



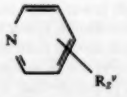
in which R^i, R^{ii}, R^{iii} and R^{iv} represent hydrogen, alkyl or alkenyl hydrocarbyl radicals at least one of which is a hydrocarbyl radical having from 50–200 carbon atoms, R is a divalent radical having from 2–10 carbon, or carbon and oxygen atoms, R^v is hydrogen or a hydrocarbyl radical, z has a value from 0–4 and X is an anion selected from the group consisting of halides, sulfates, carbonates, sulfites, borates, carboxylates, and phosphates.

13. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium diester salt composition represented by the formula:



in which R^i, R^{ii}, R^{iii} and R^{iv} represent hydrogen, alkyl or alkenyl hydrocarbyl radicals at least one of which is a hydrocarbyl radical having from 50–200 carbon atoms, R is a divalent radical having from 2–10 carbon, or carbon and oxygen atoms, R^v is hydrogen or a hydrobarbyl radical, z has a value from 0 to 4, and X is an anion selected from the group consisting of halides, sulfates, carbonates, sulfites, borates, carboxylates, and phosphates.

25. A method for preparing a quaternary ammonium diester salt composition which comprises reacting a polyolefin having from about 50 to 200 carbon atoms, with maleic anhydride in the presence of a brominated compound to produce an alkenylsuccinic acid anhydride in which said alkenyl radical has from about 50 to 200 carbon atoms reacting said alkenylsuccinic acid anhydride with a haloalcohol represented by the formula X—R—OH in which R is a divalent radical having from 2 to 10 carbon, or carbon and oxygen atoms in the presence of an acid reacting catalyst employing a mole ratio of 2 to 10 moles of said haloalcohol per mole of said anhydride to produce an intermediate diester product and reacting said intermediate diester product with a tertiary amine represented by the formula:



in which R^v is hydrogen or a hydrocarbyl radical having from 1 to 3 carbon atoms and z has a value from 0 to 4.

4,251,381

PASTY DAMPING AGENT DISPERSION

Kaspar Lochner, Karlsburger Str. 7b, 8000 München, Fed. Rep. of Germany

Continuation of Ser. No. 843,989, Oct. 20, 1977, abandoned. This application Mar. 28, 1979, Ser. No. 24,516

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647697

Int. Cl.³ C04B *43/00*

U.S. Cl. 252—62 34 Claims

1. A pasty-like damping medium dispersion for damping mechanical and acoustical vibrations and consisting essentially of:

(1) a fluid phase selected from the group consisting of polyethylene glycols, polypropylene glycols, polybutylene glycols and saturated aliphatic and aromatic carboxylic acid esters;

(2) ground graphite having a leaf-shaped and/or spherical structure and a particle size of less than 100μ and being present in an amount of 40–60% by weight relative to the total weight of the dispersion;

(3) a wetting agent for the graphite in an amount of 0.5–6% by weight relative to the total weight of the dispersion; and

(4) a viscosity stabilizer selected from the group consisting of an aluminum silicate and/or silicon dioxide and being employed in an amount of 0.5–5% by weight relative to the total weight of the dispersion;

said dispersion having a viscosity of $(1–4)\times 10^6$ cP at 25° C. and being self-sealing.

4,251,382

ABSORPTION PAIRS OF 1-CHLORO-2,2,2-TRIFLUOROETHANE AND FURAN-DERIVATIVES

Chien C. Li, Williamsville, N.Y., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

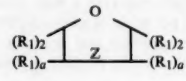
Continuation-in-part of Ser. No. 818,038, Jul. 22, 1977, Pat. No. 4,172,043, which is a continuation-in-part of Ser. No. 734,775, Oct. 22, 1976, abandoned, which is a division of Ser. No. 567,043, Apr. 10, 1975, Pat. No. 4,005,584. This application Jul. 26, 1979, Ser. No. 61,109

The portion of the term of this patent subsequent to Oct. 23, 1996, has been disclaimed.

Int. Cl.³ C09K *5/04*

U.S. Cl. 252—69 5 Claims

1. A composition of matter comprising from about 4 to about 60 weight percent of 1-chloro-2,2,2-trifluoroethane dissolved in about 40 to about 96 weight percent of an asymmetrical furan ring-containing compound, said compound having a boiling point between about 140° C. and 250° C. and the generic formula:



wherein R_1 is independently at each occurrence H; lower alkyl; lower alkoxy; phenyl; lower alkylene phenyl; hydroxy containing lower alkyl; lower alkyl carboxy; alkoxy alkyl of from 2 through 6 carbon atoms; lower alkylene carboxylate of from 2 through 6 carbon atoms; fluorine or chlorine; a is independently at each occurrence an integer of 1 or 2; and Z is a single or double bond; provided that, when Z is a single bond, a is 2, when Z is a double bond, a is 1, and provided that the compound contains at least one R_1 group having an oxygen atom which has a single bond to a carbon atom.

4,251,383

SOAP AND DETERGENT CLEANING COMPOSITIONS CONTAINING EUCALYPTUS OIL

Frederick W. Kemp, 36 Lyell Parade, Greensborough 3088, Victoria, Australia

Filed May 25, 1979, Ser. No. 42,327

Claims priority, application Australia, Jun. 7, 1978, PD4626; Mar. 29, 1979, PD8237

Int. Cl.³ C11D *3/60, 9/60*

U.S. Cl. 252—118 13 Claims

1. A soap or detergent additive composition consisting essentially of a blend of:

(a) 50 to 70% by volume of eucalyptus oil present as a 35 to 90% solution;

(b) 5 to 25% by volume of a coconut oil diethanolamide; and

(c) 1 to 25% by volume of a detergent composition which includes a non ionic, anionic or cationic surfactant.

4,251,384

ALUMINUM POLISHING COMPOSITIONS

Terence R. Rooney, Bromsgrove, England, assignor to Albright & Wilson Ltd., Warley, England

Continuation-in-part of Ser. No. 733,508, Oct. 18, 1976, Pat. No. 4,116,699. This application Oct. 19, 1977, Ser. No. 843,599

Claims priority, application United Kingdom, Oct. 20, 1975, 42902/75

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.² C11D *7/32, 7/34, 7/36*

U.S. Cl. 252—147 9 Claims

1. An aluminium polishing solution consisting essentially of

(a) phosphoric and sulphuric acid in a relative proportion of from 1:2 to 3:1, phosphoric acid having a specific gravity of 1.75 to 98 percent sulphuric acid and together constituting at least 90 percent of the total composition;

(b) nitric acid in a proportion by weight of from 1.2 to 4.2 percent as 100 percent nitric acid;

(c) dissolved copper in a concentration of from 0.01 to 0.2 percent by weight;

(d) dissolved aluminium in a concentration of between zero and saturation;

(e) from 0.05 percent to 0.7 percent by weight of an organic etch inhibitor which is an aromatic organic compound soluble in said solution and having an aromatic 6-member ring selected from the group consisting of benzene, pyridine, pyrazine, benzoquinone, and melamine rings and at least 2 hetero atoms selected from the group consisting of nitrogen, oxygen and sulphur atoms conjugated with said aromatic ring; and

(f) the balance substantially of water.

4,251,385

DIOL COMPOSITIONS

Jack W. Sigan, Worthington, Ohio, and James G. Fuller, Edgerton, Wis., assignors to Sherex Chemical Company, Inc., Dublin, Ohio

Filed Sep. 11, 1978, Ser. No. 941,224

Int. Cl.³ C08G *63/68*

U.S. Cl. 252—182 12 Claims

1. A diol composition adapted for use in preparing linear polyester resins obtained by reacting in propylene glycol as the solvent 3,3′,5,5′ tetrabromobisphenol A with at least two moles of an alkylene oxide selected from the group consisting of ethylene oxide, propylene oxide and mixtures thereof at a temperature of from 50° to 200° C. and a pressure of from 0.5 to 14 atmospheres, said glycol and said brominated bisphenol A being present in the reaction mixture in the weight ratio of from 1:19::1:2, respectively.

6. A process for preparing a diol composition for use in preparing linear polyester resins which comprises reacting in propylene glycol as the solvent 3,3′,5,5′-tetrabromobisphenol-A with at least about 2 moles of an alkylene oxide selected

from the group of ethylene oxide, propylene oxide, or mixtures thereof at a temperature of 50° to 200° C., and a pressure of 0.5 to 14 atmospheres, wherein said glycol and said brominated bisphenol-A are present in the reaction mixture in the weight ratio of from 1:9::1:2, respectively.

4,251,386

METHOD FOR PREPARING MICROCAPSULES

Keiso Saeki; Hiroharu Matsukawa, and Masato Satomura, all of Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jul. 20, 1978, Ser. No. 926,369
Claims priority, application Japan, Jul. 27, 1977, 52/90148
Int. Cl.³ B01J *13/02*
U.S. Cl. 252—316 **18 Claims**

1. In a method for preparing microcapsules comprising polymerizing urea and formaldehyde in water in the presence of 0.75 to 10% by weight of an anionic polyelectrolyte and forming a wall membrane of a urea/formaldehyde resin around droplets of a hydrophobic oily liquid, the improvement which comprises the presence of about 1% by weight or more, based on the weight of the urea, of an ammonium salt of an acid, whereby microcapsules having high heat resistance, high strength, low permeability and which are also free from microcapsule slurry coloration are obtained.

4,251,387

PROCESS FOR PREPARING SEMIPERMEABLE MICROCAPSULES

Franklin Lim, Richmond, and Richard D. Moss, Chester, both of Va., assignors to Damon Corporation, Needham Heights, Mass.

Continuation-in-part of Ser. No. 606,166, Aug. 20, 1975, which is a continuation-in-part of Ser. No. 931,177, Aug. 4, 1978, abandoned. This application Apr. 17, 1979, Ser. No. 30,847
Int. Cl.³ B01J *13/02*
U.S. Cl. 252—316 **12 Claims**

1. A process for producing microcapsules comprising membranes having an upper limit of permeability within a selected range, said process comprising the steps of:

A. forming a two-phase system comprising

a hydrophobic continuous phase and

a discontinuous phase of discrete aqueous droplets containing a first hydrophilic monomer selected from the group consisting of multifunctional alcohols and amines, said first monomer being capable of forming a polymer by reaction with a second, complementary hydrophobic monomer selected from the group consisting of diacid halides, diisocyanates, and difunctional sulfonyl halides;

B. dissolving a portion of said second monomer in the continuous phase to effect interfacial polymerization about the droplets of the discontinuous phase;

C. altering the affinity of the continuous phase for said first monomer by changing the polarity of the continuous phase during the polymerization of said first and said second monomers;

D. allowing said first and second monomers to further polymerize at the interface of the altered continuous phase; and

E. terminating the interfacial polymerization when microcapsules of the selected permeability have been produced.

4,251,388

TITANIUM TRICHLORIDE CATALYTIC COMPONENT AND METHOD FOR HOMO- OR CO-POLYMERIZATION OF α-OLEFIN

Yoshikazu Takahashi, Hikari; Yoichi Sunada, and Masaru Takitani, both of Shinnanyo, all of Japan, assignors to Toyo Stauffer Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 19, 1979, Ser. No. 49,987
Claims priority, application Japan, Jun. 23, 1978, 53-76168
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **9 Claims**

1. A titanium trichloride catalytic component for polymerization of α-olefin obtained in the following manner: in having a titanium trichloride catalytic component separate out of a solution prepared by dissolving titanium tetrachloride, an organic ether compound having the formula ROR′, wherein R and R′ are alkyl groups which are the same or different with at least one of them containing 5 or fewer carbon atoms, and an organo-aluminum compound having the formula AlR_nX_{3-n} wherein R is an alkyl group of 1–10 carbons, X is halogen or hydrogen and n is an integer of $0<n\leqq 3$, in a solvent, said solvent is a mixed solvent prepared by having 20 to 70% by volume of a concomitant aromatic hydrocarbon halide included in a mixed solvent consisting of saturated aliphatic hydrocarbon and/or alicyclic hydrocarbon; said organo-aluminum compound, said titanium tetrachloride and said organic ether compound are added at a solvent temperature not exceeding 55° C. to form a system; following this, the temperature of the system is raised up to a value between 45° and 150° C. over a period of time between 10 minutes and 24 hours; and, during the temperature raising process, the organic ether compound and/or titanium tetrachloride is further added in such amount that the molar ratio of the total amount of said ether to the total amount of titanium tetrachloride added to the system does not exceed 4, to allow a solid titanium trichloride catalytic component of average particle diameter between 10 and 1000μ to separate.

4,251,389

TITANIUM CHLORIDE PROPYLENE POLYMERIZATION CATALYST AND PROCESS FOR POLYMERIZING PROPYLENE THEREWITH

Ronald E. Gilbert, and Rajindar K. Kochhar, both of Katy, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Jan. 14, 1980, Ser. No. 112,026
Int. Cl.³ C08F *4/64*
U.S. Cl. 252—429 B **5 Claims**

1. In a process for preparing an active titanium chloride propylene polymerization catalyst in which titanium tetrachloride is treated with an aluminum alkyl compound to reduce the titanium to a lower valence state and the resulting reduced titanium chloride compound is heated to an elevated temperature in a liquid hydrocarbon medium containing a Lewis base; the improvement which consists essentially of incorporating carbon dioxide in the hydrocarbon medium while the titanium chloride product is being heated in the presence of said Lewis base.

4,251,390

PARTIAL OXIDATION CATALYST

Bruno J. Barone, Houston, Tex., assignor to Denka Chemical Corporation, Houston, Tex.

Filed Jun. 11, 1979, Ser. No. 47,323
Int. Cl.³ B01J *27/14, 31/02*
U.S. Cl. 252—435 **20 Claims**

1. In a phosphorous-vanadium mixed oxide oxidation catalyst mole ratio P/V being 0.90 to 1.3/1 produced by the process comprising reducing vanadium in the +5 valence state in a substantially anhydrous organic medium to a valence of less than +5 and digesting said reduced vanadium in concentrated phosphoric acid wherein the improvement comprises including a promoter containing a zinc compound in the mole ratio of

Zn/V in the range of 0.15 to 0.001/1 in said catalyst during said digesting thereby obtaining a catalyst activated by bringing said catalyst to operating temperature at a rate of 5 to 10° C. per hour.

4,251,391

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge,, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 13, 1979, Ser. No. 29,675

Int. Cl.[3] B01J *27/04, 27/08, 27/10, 23/64*

U.S. Cl. 252—439 **23 Claims**

1. A reforming catalyst which consists essentially of from about 0.1 to about 2 percent platinum, from about 0.1 to about 2 percent rhenium, and from about 0.01 to about 0.1 percent copper composited with an inorganic oxide support.

8. The composition of claim 1 wherein the catalyst is sulfided, and contains to about 0.2 percent sulfur.

4,251,392

REFORMING WITH MULTIMETALLIC CATALYSTS

Charles H. Mauldin, and William C. Baird, Jr., both of Baton Rouge, both of La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 30, 1979, Ser. No. 34,596

Int. Cl.[3] B01J *27/04, 27/10, 23/89*

U.S. Cl. 252—439 **16 Claims**

1. A catalyst composition useful for upgrading naphthas by reforming to produce higher octane gasolines which comprises palladium and platinum in total concentration ranging from about 0.2 to about 0.6 percent, with from about 15 to about 50 mol. percent of the composition being platinum, as contrasted with the amount of palladium contained in the composition, from about 0.1 to about 2 percent rhenium, and from about 0.01 to about 0.1 percent copper, composited with an inorganic oxide support.

7. The composition of claim 1 wherein the catalyst contains from about 0.2 to about 0.6 percent rhenium, from about 0.025 to about 0.08 percent copper, the catalyst is sulfided, and contains up to about 0.2 percent sulfur.

4,251,393

ATTRITION RESISTANT CATALYSTS

Charles A. Dalton, and William E. Slinkard, both of Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed May 29, 1979, Ser. No. 42,754

Int. Cl.[3] B01J *21/00, 23/16*

U.S. Cl. 252—443 **7 Claims**

1. An improved attrition resistant catalyst comprising:

(A) an essentially inert porous support capable of holding finely divided catalytically active material on its outer surface, said support wetted with a sufficient amount of aqueous silica sol containing from about 20 to about 40 weight percent silica to provide a support which contains up to the maximum amount of silica sol said support can sorb but does not have the appearance of liquid on the outer surface of said support; and

(B) a finely divided catalytically active oxide material for the oxidation conversion of olefinically unsaturated aldehydes to the corresponding unsaturated acids, completely calcined at temperatures in the range from about 360° C. to about 420° C.;

said finely divided catalytically active oxide material having been coated onto the surface of said wetted porous support in a manner to provide a uniform-appearing coating and the resulting catalyst dried, said catalyst having a special attrition index not exceeding 5 weight percent.

2. The catalyst of claim 1 wherein the inert porous support is silicon carbide, the aqueous silica sol used contains 30 to 40 weight percent of silica, the amount of catalytically active oxide material ranges from about 10 to about 50 weight percent based on the total catalyst and the moisture ratio ranges from about 15 to about 51 percent.

4. The catalyst of claim 2 wherein the catalytically active material has the empirical formula:

$$Mo_aV_bW_cMn_dO_e$$

wherein the atomic ratio of Mo:V:W:Mn:O being such that when a is 12, b is 0.5 to 12, c is 0.1 to 6, d is 0.5 to 20 and e is a number which represents that sufficient oxygen is present to satisfy the valence requirements of the other metals.

4,251,394

COPRECIPITATED COPPER-NICKEL-SILICA CATALYSTS, PREPARATION AND USE THEREOF

James L. Carter, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 819,346, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 729,721, Oct. 5, 1976, abandoned, which is a continuation of Ser. No. 577,328, May 14, 1975, abandoned. This application Aug. 25, 1978, Ser. No. 936,775

Int. Cl.[3] B01J *21/08, 23/70*

U.S. Cl. 252—452 **27 Claims**

1. A calcined, coprecipitated copper-nickel-silica catalyst of high activity for hydrogenating organic compounds with hydrogen at temperatures ranging from about 75° C. to about 300° C. when the catalyst is activated with a gaseous reductant at temperatures ranging from about 75° C. to about 400° C., said catalyst being characterized as capable of having a reduced nickel surface area ranging from about 55 to about 100 m^2/g as determined by hydrogen chemisorption, after reduction at 400° C. and a B.E.T. total surface area ranging from about 150 to about 300 m^2/g, said catalyst being further characterized as capable of being activated in the presence of a gaseous reductant at temperatures ranging from about 80° C. to about 250° C., wherein the amount of copper in the catalyst ranges from about 2 wt.% to about 10 wt.% and the amount of nickel in the catalyst ranges from about 25 wt.% to about 50 wt.%, said wt.% of copper and nickel based on the total weight of the catalyst, said catalyst having been prepared by the process comprising:

(a) preparing an aqueous mixture containing nickel, copper and silicate ions and solid porous carrier particles under conditions of dilution such that the amount of dissolved nickel in said aqueous mixture is below 0.60 moles/liter;

(b) heating the aqueous mixture;

(c) adding a precipitating agent to coprecipitate the dissolved copper, nickel and silicate ions with the solid porous carrier particles; and

(d) drying said coprecipitated catalyst and calcining it at a temperature ranging from 300° to 450° C.

17. A process for preparing a copper-nickel-silica catalyst comprising the steps:

(a) uniformly comingling a first aqueous solution containing silicate anions and solid porous carrier particles with a second solution containing nickel and copper cations under conditions of dilution such that the amount of dissolved nickel in the comingled solution is below 0.60 moles/liter;

(b) heating the comingled reaction mixture;

(c) adding a water soluble alkaline precipitating agent to coprecipitate the copper, nickel and silicate ions onto said solid porous carrier particles;

(d) drying said coprecipitated catalyst and calcining it at a temperature ranging from 300° to 450° C.;

(e) reducing said calcined and coprecipitated catalyst at a temperature ranging from 75° C. to 400° C. to thereby obtain an activated catalyst having a B.E.T. total surface area ranging from about 150 to about 300 m^2/g and a nickel surface area ranging from about 55 to about 100

m^2/g as determined by hydrogen chemisorption, after reduction at 400° C.

4,251,395

CRACKING CATALYST

Albert B. Schwartz, Philadelphia, Pa., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 897,077, Apr. 17, 1978, abandoned, and Ser. No. 642,884, Dec. 22, 1975, abandoned, which is a continuation of Ser. No. 440,890, Feb. 4, 1974, abandoned, and a continuation-in-part of Ser. No. 399,008, Sep. 29, 1973, abandoned. This application Jun. 28, 1979, Ser. No. 52,711

Int. Cl.[3] B01J *29/06, 21/12*

U.S. Cl. 252—455 Z 5 Claims

1. A solid, acid, porous aluminosilicate hydrocarbon cracking catalyst that contains about 0.01 to 50 parts per million, based on said catalyst, of platinum in a form inherently capable of dehydrogenating gas oil; which catalyst has substantial activity to catalyze the endothermic cracking, in a cracking zone, of gas oil boiling range hydrocarbons at elevated temperatures and in the absence of added hydrogen, with concomitant deactivation during said cracking by reason of the deposition of coke thereon, in an amount not substantially higher than the amount of coke, based upon feed, which would have been deposited on said catalyst under the same operating conditions in the absence of said incorporated platinum; which catalyst in its coked condition is adapted to be transported to a regeneration zone and therein, in combination with sufficient oxygen, to be exothermically regenerated and heated by burning coke thereoff to produce a heated, reactivated catalyst and a flue gas having a higher ratio of carbon dioxide to carbon monoxide than said flue gas would have using said catalyst without said platinum; and which heated, reactivated catalyst is adapted to be returned to said cracking zone.

2. The cracking catalyst claimed in claim 1 containing up to about 10 ppm of said platinum.

4,251,396

COPPER CHROMITE CATALYST FOR PREPARATION OF FURFURYL ALCOHOL FROM FURFURAL

Leo J. Frainier, and Herman H. Fineberg, both of Columbus, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Filed Feb. 26, 1979, Ser. No. 15,574

Int. Cl.[3] B01J *23/26, 23/72*

U.S. Cl. 252—467 10 Claims

1. A method of preparing a copper chromite catalyst comprising forming a basic copper ammonium chromate complex by precipitation by adding a hydroxide to a solution of a copper-containing salt and a chromium containing salt until the solution has a pH between 7 and 7.5, heating the complex formed until decomposition of the complex occurs and maintaining the decomposing complex at a temperature around or below 300° C. until decomposition is complete.

4,251,397

VEHICLE FOR THICK FILM RESISTORS FIREABLE IN NONOXIDIZING ATMOSPHERE

David H. Scheiber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 16, 1978, Ser. No. 934,271

Int. Cl.[3] H01B *1/06*

U.S. Cl. 252—521 5 Claims

1. A resistor and/or conductor composition consisting essentially of inorganic powder solids content dispersed in an organic vehicle wherein the weight ratio of solids content to vehicle is from 1:2 to 20:1 and wherein the solid content consists essentially of:

A. 10–95 parts by weight, based on the weight of solids, of conductive material selected from the group consisting of LaB_6, YB_6, rare earth hexaborides, CaB_6, BaB_6 and SrB_6; and

B. 90–5 parts by weight, based on the weight of solids, of at least 98 mole%, based on the mole% of the oxide components of the glass, of nonreducible glass, each component having a Gibbs free energy of formation at 900° C. of less than approximately −78 kcal/mole per each metal-oxygen bond in the molecule;

wherein the organic vehicle is based on copolymers of 57–74 mole% α-olefins of up to and including four carbon atoms and 26–43 mole% vinyl esters of acids containing up to and including four carbon atoms, said copolymers are soluble in solvents suitable for thick film printing; and

wherein the composition is fireable in substantially nonoxidizing atmosphere.

4,251,398

CYCLOHEXYL-PENTANOLIDES AND THEIR USE IN PERFUME

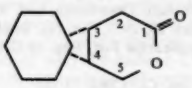
Erling Sundt, Vessy, Ge; Roland Aschiero, Bernex, Ge, and Walter Schenk, Geneva, all of Switzerland, assignors to Firmenich SA, Geneva, Switzerland

Division of Ser. No. 2,178, Jan. 9, 1979, abandoned. This application Oct. 23, 1979, Ser. No. 87,510

Int. Cl.[3] C11B *9/00*

U.S. Cl. 252—522 R 3 Claims

1. A lactone having the formula



(I)

wherein the cyclohexyl radical is bound to the carbon atoms at position 3 or 4 of the lactonic ring as indicated by the dotted lines.

4,251,399

CO-CROSSLINKABLE BLEND COMPOSITION COMPRISING IODINE-CONTAINING FLUOROELASTOMER

Masayasu Tomoda, Otsu, and Yutaka Ueta, Toyonaka, both of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 5, 1979, Ser. No. 82,274

Claims priority, application Japan, Oct. 7, 1978, 53-123860

Int. Cl.[3] C08L *7/00, 27/16, 27/22, 9/00*

U.S. Cl. 260—4 R 7 Claims

1. A co-crosslinkable blend composition which comprises a fluoroelastomer comprising units of vinylidene fluoride and at least one other copolymerizable fluoroolefin having iodine bonded thereto in an amount of 0.001 to 10% by weight, an elastomer crosslinkable in the presence of a peroxy radical, and an organic peroxide, the amount of elastomer being from 5 to 100 parts by weight with respect to 100 parts by weight of the iodine-containing fluoroelastomer.

4,251,400

HOT AND COLD WATER REDISPERSIBLE POLYVINYL ACETATE ADHESIVES

Peter S. Columbus, Queens, N.Y., assignor to Borden, Inc., Columbus, Ohio

Continuation of Ser. No. 699,530, Jun. 24, 1976, abandoned, which is a continuation of Ser. No. 195,499, Nov. 3, 1971, abandoned. This application Sep. 10, 1979, Ser. No. 74,005

Int. Cl.[3] C08L *29/04, 39/06, 89/04, 89/06*

U.S. Cl. 260—8 9 Claims

1. A polyvinyl acetate adhesive redispersible in hot and cold water when in dried film form, consisting essentially of an emulsion of a polyvinyl acetate; an anti-coalescing polyvinylpyrrolidone and a non-volatile, water-soluble plasticizer for said anti-coalescing agent that is immiscible with the polyvinyl acetate resin, said plasticizer being present in amount to impart flexibility to the dried adhesive film and the ratio of polyvinyl acetate to anti-coalescing agent not exceeding from about 8

parts by weight of acetate for each part by weight of polyvinylpyrrolidone.

3. A polyvinyl acetate adhesive redispersible in hot and cold water when in dried film form consisting essentially of an aqueous emulsion of an unhydrolyzed polyvinyl acetate; and anti-coalescing polyvinylpyrrolidone agent which is not copolymerized with polyvinyl acetate; and a non-volatile, water-soluble plasticizer for said anti-coalescing agent that is immiscible with the polyvinyl acetate resin; the plasticizer being selected from the group consisting of glycerol, sorbitol, ethylene glycol, propylene glycol, diethylene glycols and mixtures thereof, said plasticizer being present in amount sufficient to impart flexibility to the dried adhesive film and the ratio of polyvinyl acetate to polyvinylpyrrolidone not exceeding from about 8 parts by weight of acetate for each part by weight of polyvinylpyrrolidone.

4,251,401

SUSPENSIONS OF ISOCYANATE DISTILLATION RESIDUES IN POLYOLS

Artur Reischl, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 88,809

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846814

Int. Cl.³ C08L *75/00*

U.S. Cl. 260—9 **9 Claims**

1. Dispersions comprising

(A) from 2% to 60% by weight, based on the total weight of the dispersion, of a crosslinked distillation residue which is insoluble in inert organic solvents and which cannot be melted without decomposing, and which contain less than 15% by weight of free isocyanate groups, of the type accumulating in the form of slag in the removal of monomeric tolylene diisocyanates by distillation which are ground to an average particle size of less than 350 mμ as the disperse phase in

(B) compounds containing at least two aliphatic hydroxyl groups and having an average molecular weight of from 400 to 10,000 as the coherent phase.

4,251,402

POLYESTER-STARCH SIZED PAPER, SIZING COMPOSITION, AND PROCESS THEREFOR

Robert B. Login, and Daniel R. Dutton, both of Woodhaven, Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 908,403, May 22, 1978, Pat. No. 4,210,685. This application Jul. 30, 1979, Ser. No. 61,702

Int. Cl.³ C08L *3/02, 3/04*

U.S. Cl. 260—9 **7 Claims**

1. An aqueous size composition useful in the coating of cellulosic materials to improve the water resistance thereof comprising water, a degraded starch or starch derivative, and a branched chain, water-dispersible polyester having an average molecular weight of about 4,000 to about 11,000 and a carboxylic acid number of about 5 to about 15, wherein said polyester is the condensation product of a dicarboxylic reactant, a diol or polyoxyalkylene glycol, and a phosphorus acid reactant and wherein said polyester is present in said aqueous size composition in the weight ratio of 4 to 60 parts by weight for each 100 parts by weight of starch solids and said starch in said aqueous size composition is present in a total amount of about 1 part to about 10 parts by weight based on 100 parts total weight of said water, starch, and polyester.

4,251,403

PROCESS FOR SIZING FILAMENT YARN UTILIZING AN IMPROVED WARP SIZE COMPOSITION OF PVAL, UREA AND SACCHARIDE

Richard W. Rees, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 901,851, May 1, 1978, abandoned. This application Dec. 5, 1979, Ser. No. 100,351

Int. Cl.³ C08L *5/00*

U.S. Cl. 260—17.4 SG **10 Claims**

1. A process for sizing filament yarn with a composition consisting essentially of (a) from about 40 to about 90% by weight, on a dry basis, of polyvinyl alcohol having a degree of hydrolysis of from about 88 to about 100 mol % and a solution viscosity of from about 5 to about 50 mPa·s measured as a 4% aqueous solution at a temperature of 20° C., (b) from about 5 to about 30% by weight of urea, and (c) from about 5 to about 30% by weight of saccharide selected from the group consisting of mono- and di-saccharides.

4,251,404

ACRYLIC GRAFT COPOLYMERS AND COATING COMPOSITIONS THEREOF

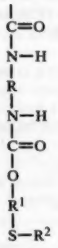
John A. Simms, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 972,426, Dec. 22, 1978, which is a division of Ser. No. 820,879, Aug. 1, 1977, Pat. No. 4,151,227. This application Nov. 7, 1979, Ser. No. 91,892

Int. Cl.³ C08L *1/04, 1/10, 1/14*

U.S. Cl. 260—15 **9 Claims**

1. A coating composition comprising 5–60% by weight of a film forming constituent of a graft copolymer and 50–95% by weight of a liquid, wherein the graft copolymer consisting essentially of about 25–95% by weight of a cellulose ester or nitro cellulose polymer backbone and about 5–75% by weight of acrylic side chains; wherein the backbone contains pendent hydroxyl groups before the attachment of side chains by replacement of a hydrogen of at least one of the hydroxyl groups by the formula



where R is an aliphatic group, a cycloaliphatic group or an aromatic group; R^1 is an alkylene group having 2–6 carbon atoms, R^2, which forms a side chain, is an acrylic polymer.

4,251,405

PROCESS FOR PRODUCING PLASTICIZED VINYLIDENE CHLORIDE-VINYL CHLORIDE COPOLYMER

Kunizoh Kidoh; Hideki Wakamori, and Hidetora Kashio, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 27, 1979, Ser. No. 33,984

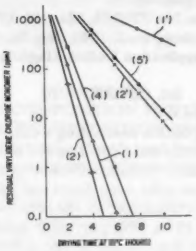
Claims priority, application Japan, May 31, 1978, 53-64365

Int. Cl.³ C08L *91/00;* **C08F** *14/08, 114/08, 214/08*

U.S. Cl. 260—18 PF **4 Claims**

1. In a process for producing a plasticized vinylidene chloride-vinyl chloride copolymer by copolymerizing 65 to 95

wt.% of vinylidene chloride and 35 to 5 wt.% of vinyl chloride or a mixture of vinyl chloride as a main component and a comonomer, an improvement characterized by adding 0.5 to 10.0 wt. parts of a plasticizer being soluble in said monomer



mixture by a suspension polymerization in the presence of an oil soluble radical initiator and a macromolecular suspending agent in water at a continuous one-step polymerization carried out within the range of from 30° C. to 80° C.

4,251,406

WATER-BORNE ALKYDS

Philip Heiberger, Broomall, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 18, 1978, Ser. No. 970,235

Int. Cl.³ C09D *3/64*

U.S. Cl. 260—22 R **11 Claims**

1. A water-compatible, air-curable, film-forming alkyd resin carrying, on an aromatic nucleus, 0.1–10% by weight of $-SO_3X$, X being sodium or potassium.

4,251,407

POLYPROPYLENE COMPOSITIONS

Carl W. Schroeder, and Joseph R. Webster, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 671,649, Mar. 29, 1976, abandoned. This application Sep. 1, 1978, Ser. No. 939,164

Int. Cl.³ C08K *3/22*

U.S. Cl. 260—23 R **21 Claims**

1. Improved polypropylene composition comprising essentially a substrate of polypropylene containing a high proportion of stereoregular propylene polymer which is insoluble in xylene at ambient temperature and containing at least one of (i) a corrosion-causing amount up to about 100 ppm of chlorine present as residue of a Ziegler type polymerization catalyst, (ii) at least 3% of xylene-soluble propylene polymer; and (iii) an amount of salt or ester of long chain fatty acid which results in plate-out during thermal processing of said substrate, said composition being conventionally stabilized against degradation under the influence of heat, and containing from 0.005 to 0.05 percent by weight of zinc oxide having a mean particle size no greater than 0.3 micron.

4,251,408

SYNTHETIC RESIN BINDERS AND THEIR USE FOR THE MANUFACTURE OF ABRASIVES

Wolfgang Hesse, Breckenheim; Richard Sattelmeyer, Schlangenbad-Georgenborn, and Eckart Teschner, Hünstetten-Limbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Aug. 25, 1978, Ser. No. 936,833

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1977, 2738267

Int. Cl.³ C08L *61/10, 61/12*

U.S. Cl. 260—29.3 **7 Claims**

1. A synthetic resin binder comprising an aqueous mixture of phenolic resins and optionally other additives, wherein the mixture of phenolic resins comprises:

(I) at least one phenol-resole which contains at least 1.1 mol formaldehyde per phenolic hydroxyl group of a monohydric phenol and

(II) at least one co-condensate of at least one monohydric phenol and at least one polyhydric phenol with formaldehyde, which co-condensate contains from 1.1 to 1.9 mol of formaldehyde per mol of monohydric phenol and from 0.1 to 2.0 mol of a polyhydric phenol per mol of monohydric phenol, the molar ratio of the quantities of formaldehyde used to the sum of phenols being in the range of from 0.6:1 to 1.5:1.

4,251,409

ADHESION OF POLYAMIDE OR POLYESTER CORDS TO RUBBER

Terry C. Neubert, Kent, Ohio, assignor to The General Tire & Rubber Company, Akron, Ohio

Filed Apr. 23, 1979, Ser. No. 32,071

Int. Cl.³ C08L *61/10, 61/12*

U.S. Cl. 260—29.3 **4 Claims**

1. A composition of matter comprising an aqueous alkaline dispersion of about 10 to 30% by weight solids comprising on a dry weight basis 100 parts by weight of a rubbery graft low gel vinyl pyridine copolymer consisting essentially of

(a) a core of a copolymer of butadiene-1,3 and styrene in the parts by weight ratio of butadiene-1,3 to styrene of about 40:60 to 60:40 and having a gel content of from about 0 to below 40% and

(b) a shell of a copolymer of butadiene-1,3 and a vinyl pyridine and having a gel content of from about 0 to below 70% and

(c) where in said graft copolymer the total amount of said monomers is from about 47 to 69% by weight of butadiene-1,3, from 23 to 52% by weight of styrene and from 1 to 8% by weight of the vinyl pyridine and a water-soluble thermosetting phenolic-aldehyde resin in an amount of from about 10 to 40 parts by weight.

4,251,410

REACTION PRODUCTS OF A POLYACRYLAMIDE FORMALDEHYDE, A SECONDARY AMINE AND AN-NH GROUP-CONTAINING FUNCTIONAL DERIVATIVE OF AN ACID

Bernard Danner, Riedisheim, France; Hans Gerber, Allschwil, Switzerland, and Helmut Pummer, Forchtenstein, Australia, assignors to Sandoz Ltd., Basel, Switzerland

Continuation-in-part of Ser. No. 832,203, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 801,021, May 26, 1977, abandoned. This application Nov. 24, 1978, Ser. No. 963,634

Claims priority, application Switzerland, May 26, 1976, 6648/76; Feb. 25, 1977, 2377/77; Oct. 19, 1978, 10817/78

Int. Cl.³ C08F *8/28;* C08L *61/02, 61/20*

U.S. Cl. 260—29.40 A **41 Claims**

1. The product of the reaction between:

(a) a polymerisate of acrylamide and/or methacrylamide and optionally of one or more further types of polymerisable ethylenic-unsaturated monomers, the acrylamide and/or methacrylamide monomers constituting at least 5 molar percent of any prepolymerisation mixture of such monomers and further types of ethylenic-unsaturated monomers,

(b) formaldehyde,

(c) a secondary amine of formula I,

I

wherein each of R_1 and R_2, independently, is (C_{1-6})alkyl, (C_{3-6})alkenyl, (C_{2-4})hydroxyalkyl or cyclohexyl, or R_1 and R_2 together constitute 1,5-pentamethylene, 1,4-tetramethylene, or 1,4-tetramethylene interrupted by O, S or N-(C_{1-4})alkyl, and

(d) a functional derivative of an acid having stabilizing properties against further crosslinking and/or polymerisation of the reaction product and containing in the functional radical at least one NH group capable of entering into equilibrium reaction with formaldehyde under the reaction conditions used,

under neutral or basic conditions and in the molar ratio of reagents (b):(c):(d) per mol of carbamoyl group in reagent (a) of x:y:z, wherein y is 0.1 to 3, x is 0.1 to (y+1), and z is greater than zero, which end reaction product is in free base, acid addition salt or quaternary ammonium salt form.

4,251,411

PROCESS FOR THE MANUFACTURE OF ORGANIC POLYMER POLYOL

Gerhard Heinz, Weisenheim; Hermann Dikow, Hockenheim; Wolfgang Jarre, Ludwigshafen; Dietmar Nissen, Heidelberg; Klaus Matthias, Viernheim, and Hanshelmut Kaeppel, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Sep. 11, 1978, Ser. No. 941,285

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1977, 2740672

Int. Cl.³ C08K *5/05*

U.S. Cl. 260—29.6 E **3 Claims**

1. A process for the manufacture of organic polymer polyol dispersions from the polyhydroxyl compounds and aqueous polymer dispersions comprising the steps of

mixing said polyhydroxyl compounds and said aqueous polymer dispersions in a reaction medium containing a recycled partially dehydrated organic polymer polyol dispersion wherein the weight ratio of said introduced polyhydroxyl compound to the introduced aqueous polymer dispersion is 1:05 to 1:2,

removing water from the mixture in an amount sufficient to provide a water content of 0.2 to 5 percent by weight based on the total weight of the mixture,

removing a portion of the organic polymer polyol dispersion obtained, and

recycling the remaining portion of the organic polymer polyol dispersion obtained,

with the weight ratio of the recycled organic polymer polyol dispersion to the removed organic polymer polyol dispersion being from 40:1 to 1:2.

4,251,412

REDUCING RESIDUAL ACRYLONITRILE IN WATER DISPERSIONS OF ACRYLONITRILE POLYMERS WITH AMINE

Gino P. Ferrini, Ravenna, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 1, 1978, Ser. No. 956,545

Int. Cl.³ C08L *33/20*

U.S. Cl. 260—29.6 PT **5 Claims**

1. A process for reducing the acrylonitrile content of an aqueous dispersion of an elastomer or plastic acrylonitrile polymer containing free acrylonitrile comprising adding to said dispersion at least a stoichiometric amount of an amine to react with said acrylonitrile.

4,251,413

SEALANT MATERIAL

Joseph A. Davison; Graham W. Hall, both of Cheltenham; Newton J. Hodges, Charlton Kings, and David W. Price, Cheltenham, all of England, assignors to Coal Industry (Patents) Limited, London, England

Continuation of Ser. No. 777,055, Mar. 14, 1977, abandoned. This application Jan. 2, 1980, Ser. No. 109,023

Claims priority, application United Kingdom, Apr. 12, 1976, 13420/76

Int. Cl.³ C08J *9/30*

U.S. Cl. 260—29.6 MM **3 Claims**

1. A sealant composition comprising a coke oven door sealant for coke oven doors and joints and like installations which coke oven doors sealant remains effective as a sealant to prevent gas leakage from coke oven doors and joints and the like at temperatures up to about 200° C., the coke oven door sealant having from about 25 to 55% polyvinyl acetate-based latex, said latex having a solids content of about 50% and having a pH of not less than about 4.5, the sealant having from about 10 to 25% water, and having from about 25 to 45% of a particulate filler, which is finer than 200 mesh British Standard, the coke oven door sealant having from about 5 to 15% of an inorganic fiber, at least about 40% of which fiber will pass through a 100 mesh British Standard sieve, the coke oven door sealant being effective as a sealant against gas leakage for several hours at temperatures up to about 200° C. and the coke oven door sealant being effective as a gas sealant and remaining flexible at temperatures of up to about 80° C. for several months.

4,251,414

CATHODIC SEDIMENT TYPE OF ELECTRODEPOSITION PAINT POSITION

Hisao Nakada; Michisuke Harada; Yukio Yamase, and Ryuji Matsui, all of Ichihara, Japan, assignors to Nippon Soda Company, Ltd., Tokyo, Japan

Filed Jun. 13, 1979, Ser. No. 48,145

Int. Cl.³ C08L *63/00, 63/08*

U.S. Cl. 260—297 NR **17 Claims**

1. A cathodic sediment type of electrodeposition paint composition which comprises using as a main component an addition material made of a butadiene polymer having an epoxy group and an amino compound as a first component and an addition material of epoxy resin or a modified epoxy resin and an amino compound as a second component, wherein, said butadiene polymer having an epoxy group consists of material selected from the group consisting of:

(A) a butadiene homopolymer having an epoxy group at the terminal of the polymer chain, or a butadiene copolymer consisting of 30 to 100 weight percent of butadiene as a constituent of the polymer chain and 70 to zero weight percent of α-methyl styrene or styrene,

(B) a derivative of a butadiene polymer having an epoxy group at the terminal part or the intramolecular part of the polymer chain obtained by treating the aforementioned butadiene homopolymer or butadiene copolymer with an organic peroxide, and,

(C) a butadiene polymer having an epoxy group at the intramolecular part of the polymer chain produced by treating the aforementioned butadiene homopolymer or copolymer by a polymerization process with an organic peroxide; said amino compound used in both said first and second components consists of material selected from the group consisting of mono- or di-alkylamines, including propylamine, butyle amine, diethyl amine, dipropylamine, alkanol amines including ethanol amine, diethanol amine, dipropanol amine, mono or polyalkylene polyamines including ethylene diamine, propylene diamine, hexamethylene diamine, diethylene triamine, triethylene tetramine N-amino ethanol amine and diethyl aminopropyl amine; and, the modified epoxy resin consisting of the aforementioned epoxy resins reacted with a cresol, novolak type of

resin, or a bisphenol type, and an alkylene oxide having 1 to 4 carbon atoms with an an addition reaction step; said first and second components being homogeneously chemically bonded by using about 99% to about 20% of the first component to about 1% to about 80% by weight of the second component, the amino compound having from about 50% to 95% by weight of amine equivalent in proportion to the equivalent epoxy group.

4,251,415

PAINT COMPOSITION FOR CATIONIC ELECTRODEPOSITION PROCESS

Hisao Nakada; Michisuke Harada, and Seiji Yoshikoshi, all of Ichihara, Japan, assignors to Nippon Soda Company Limited, Ohtemachi, Japan

Filed Jun. 21, 1979, Ser. No. 50,751
Claims priority, application Japan, Jun. 27, 1978, 53-77781
Int. Cl.[3] C08L *63/00, 13/02*
U.S. Cl. 260—29.7 NR **1 Claim**

1. A paint composition for cationic electrodeposition in the form of an aqueous solution or dispersion, essentially prepared by:

(a) reacting a carboxyl terminated polymer of a conjugated diene or a carboxyl terminated copolymer of a conjugated diene and vinyl monomer with a bisphenol A-epichlorohydrin epoxy resin condensate, in an amount of at least one equivalent part of the epoxy group of the latter in proportion to one equivalent part of the carboxyl group of the former at a temperature of about 80° C. to about 200° C. until the carboxyl group may be substantially eliminated to produce a reaction intermediate;

(b) reacting said intermediate with a primary amine or a secondary amine compound, in an amount of not more than one equivalent part of said amine compound in proportion to one equivalent part of the epoxy group of said intermediate at a temperature of about 50° C. to about 150° C. to obtain an epoxy-amine adduct first component having an amine value of 20 to 200;

(c) reacting said first component with a partial block isocyanate compound as a second component, the ratio of said first and second components being selected as 99 to 55 percent by weight of the former to 1 to 50 percent by weight of the latter component; and,

(d) neutralizing the resultant resin with an acid to render the resultant resin soluble or dispersible in water.

4,251,416

CARPET BACKING ADHESIVE

Jay W. Palmer, Temple Terrace, Fla., assignor to United States Gypsum Company, Chicago, Ill.

Filed Nov. 21, 1979, Ser. No. 96,581
Int. Cl.[3] C08K *3/24*
U.S. Cl. 260—29.7 S **15 Claims**

1. An adhesive composition comprising an aqueous styrene-butadiene latex emulsion, calcium sulfate dihydrate and from about 0.5% to about 5% by weight of at least one anti-coagulant selected from the class consisting of ammonium sulfate and sodium sulfate.

4,251,417

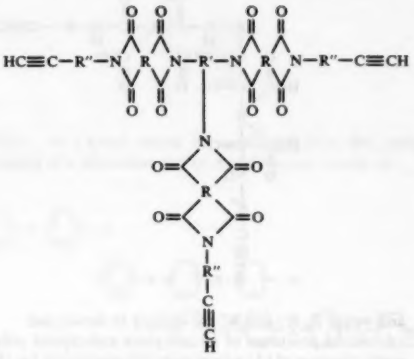
NOVEL ACETYLENE END-CAPPED POLYIMIDE OLIGOMERS

Wai Y. Chow, and William J. Heilman, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

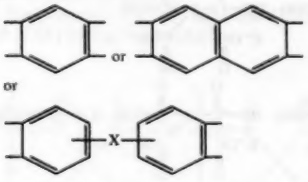
Filed Apr. 25, 1979, Ser. No. 32,997
Int. Cl.[3] C08G *73/12*
U.S. Cl. 260—30.2 **20 Claims**

1. A product selected from the group consisting of:

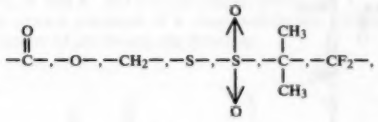
A. An acetylene end-capped polyimide oligomer whose principal component has the structure:



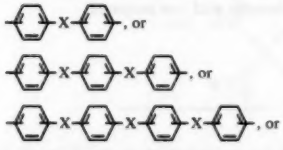
where R has the structure:



where X is

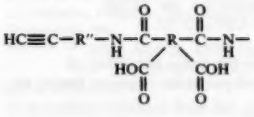


or a bond; where R′ is an aryl group; and and where R″ is selected from the group consisting of a phenylene group, a naphthylene group, or



and where X is as defined above;

B. A first precursor of an acetylene end-capped polyimide oligomer of (A) whose principal component has the structure:



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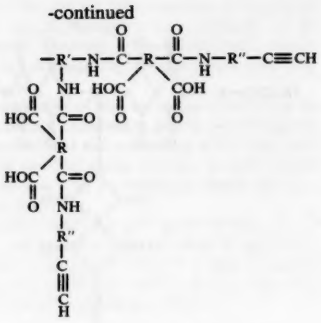
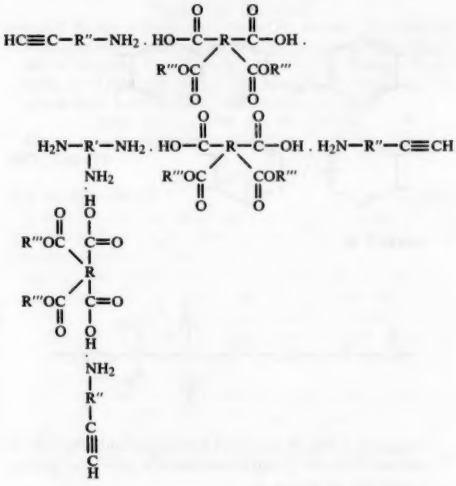


and where R, R', and R'' are defined as above; and

C. A second precursor of an acetylene end-capped polyimide oligomer of (A) whose principal component has the structure:



where R, R', and R'' are as defined above, and where R''' is the alcohol moiety from which the diester of the aromatic tetracarboxylic acid was prepared.

4,251,418

POLYIMIDE OLIGOMERS

Wai Y. Chow, and S. Paul Thackaberry, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

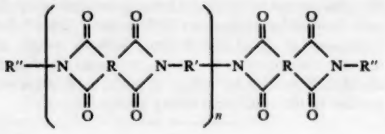
Filed Apr. 27, 1979, Ser. No. 33,765

Int. Cl.³ C08G *73/12*

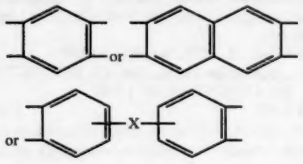
U.S. Cl. 260—30.2 **15 Claims**

1. A product selected from the group consisting of:

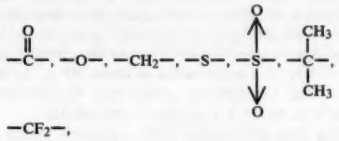
A. An acetylene end-capped polyimide oligomer having the structure:



where R has the structure:

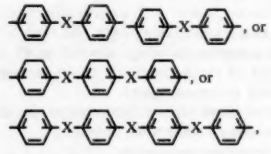


where X is



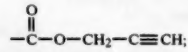
or a bond, and

where R' is selected from the group consisting of a phenylene group, a naphthylene group, or

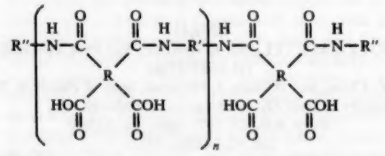


where X is as defined above; and

where R'' is an aryl group bearing a substituent having the structure:

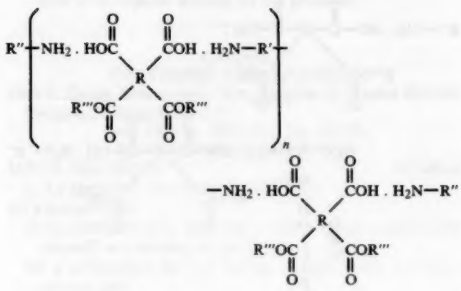


B. A first precursor of an acetylene end-capped polyimide oligomer of (A) having the structure:



where R, R' and R'' are as defined above; and

C. A second precursor of an acetylene end-capped polyimide oligomer of (A) having the structure:



where R, R′ and R″ are as defined above and R‴ is the alcohol moiety from which the diester of the aromatic tetracarboxylic acid was prepared, and where in each of the above formulas n has an average value from 1 to about 4.

4,251,419

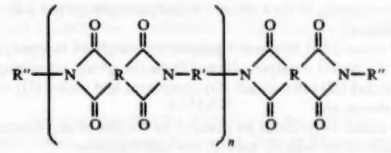
NOVEL VINYL END-CAPPED POLYIMIDE OLIGOMERS

William J. Heilman, and Daniel J. Hurley, both of Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

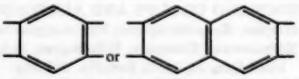
Filed Apr. 5, 1979, Ser. No. 27,334
Int. Cl.³ C08G 73/12
U.S. Cl. 260—30.2 **13 Claims**

1. A product selected from the group consisting of:

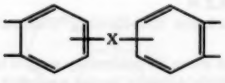
A. A vinyl end-capped polyimide oligomer having the structure:



where R has the structure:

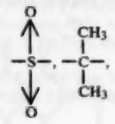


or

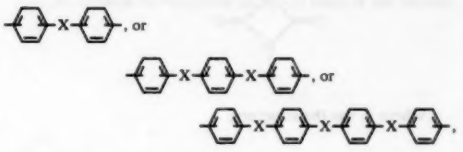


where X is

—O—, —CH_2—, —S—,

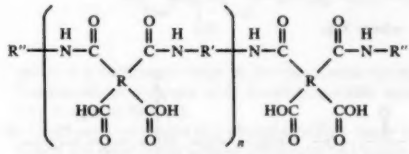


—CF_2—, or a bond, where R′ is selected from the group consisting of a phenylene group, a naphthylene group, or



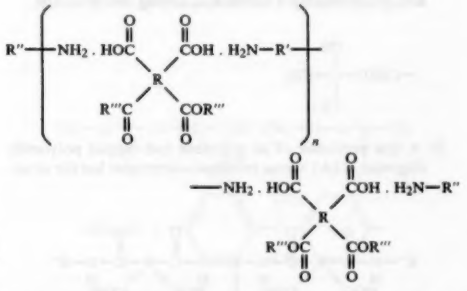
where X is as defined above; and where R″ consists of about 50–100 mol % of a vinyl substituted aryl group and the balance (if any) an unsubstituted aryl group; and where n has an average value of from 1 to about 4;

B. A first precursor of a vinyl end-capped polyimide oligomer of (A) having the structure:



where R, R′ and R″ and n are as defined above; and

C. A second precursor of a vinyl end-capped polyimide oligomer of (A) having the structure:



where R, R′ and R″ are as defined above and R‴ is the alcohol moiety from which the diester of the aromatic tetracarboxylic acid was prepared.

4,251,420

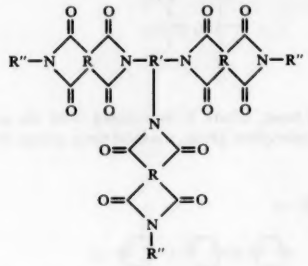
END-CAPPED POLYIMIDE OLIGOMERS

Patricia A. Antonoplos, Huntington Beach, Calif., and William J. Heilman, Houston, Tex., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

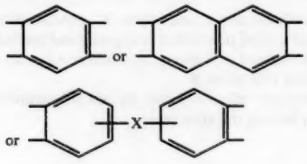
Filed Apr. 23, 1979, Ser. No. 32,199
Int. Cl.³ C08G 73/12
U.S. Cl. 260—30.2 **20 Claims**

1. A product selected from the group consisting of:

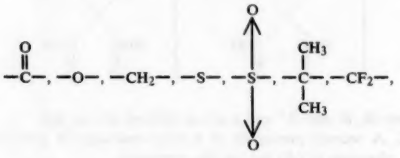
A. An acetylene end-capped polyimide oligomer whose principal component has the structure:



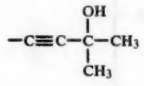
where R has the structure;



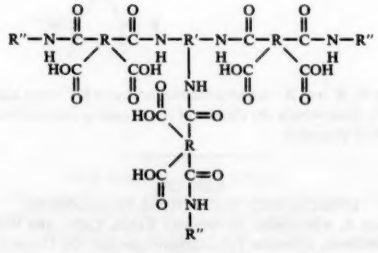
where X is



or a bond; where R′ is an aryl group; and where R″ is an aryl group bearing a substituent having the structure;

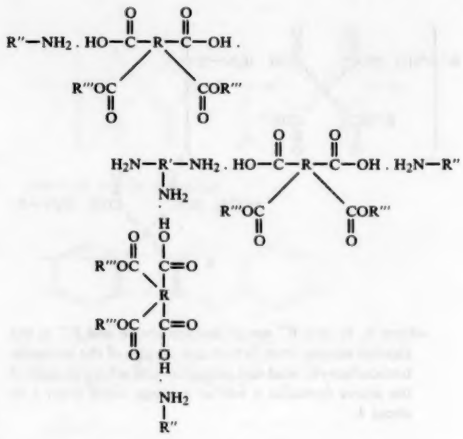


B. A first precursor of an acetylene end-capped polyimide oligomer of (A) whose principal component has the structure;



where R, R′ and R″ are as defined above; and

C. A second precursor of an acetylene end-capped polyimide oligomer of (A) whose principal component has the structure;



where R, R′ and R″ are as defined above, and where R‴ is the alcohol moiety from which the diester of the aromatic tetracarboxylic acid was prepared.

4,251,421

COATING COMPOSITIONS CONTAINING POLYMERS WITH ISOCYANO GROUPS AND NICKEL OLIGOMERIZATION CATALYSTS

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1979, Ser. No. 108,842

Int. Cl.[3] **C08G** *18/82, 18/83;* **C08F** *8/42;* **C08K** *5/10*

U.S. Cl. 260—31.2 N **13 Claims**

1. A cross-linkable film-forming composition consisting essentially of:

(1) about 15 to about 80 percent by weight of said composition of a soluble polymer having a number average molecular weight of about 500 to about 50,000, said polymer containing at least about 1.5 isocyano groups per polymer chain;

(2) about 0.001 to about 1 percent by weight of said polymer of a nickel catalyst selected from the group consisting of nickel (II) salts, nickel (O) complexes and nickel (II) complexes; and

(3) about 19 to about 84 percent by weight of said composition of an organic solvent for said polymer.

4,251,422

COATING COMPOSITIONS CONTAINING POLYMERS WITH ISOCYANO GROUPS AND ALKYLBORANES

Walter R. Hertler, Kennett Square, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 31, 1979, Ser. No. 108,843

Int. Cl.[3] **C08F** *8/30;* **C08K** *5/10;* **C08G** *18/82, 18/83*

U.S. Cl. 260—31.2 N **13 Claims**

1. A cross-linkable film-forming composition consisting essentially of:

(1) about 15 to about 80 percent by weight of said composition of a soluble polymer having a number average molecular weight of about 500 to about 50,000, said polymer containing at least about 1.5 isocyano groups per polymer chain;

(2) about 0.3 to about 50 percent by weight of said polymer of a trialkylborane cross-linking agent, the molar ratio of trialkylborane to isocyano groups being about 0.1 to about 1.0; and

(3) about 19 to about 84 percent by weight of said composition of an organic solvent for the polymer.

4,251,423

POLYESTER WIRE ENAMELS

Otto S. Zamek, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Feb. 14, 1979, Ser. No. 12,200
Int. Cl.³ C08K 5/06; H01B 7/00
U.S. Cl. 260—33.2 R **8 Claims**

1. An electrical wire enamel comprising

(a) a polyester of

(i) terephthalic acid, isophthalic acid a reactive derivative thereof, or a mixture thereof;

(ii) a polyhydric alcohol having at least three hydroxyl groups; and

(iii) 1,2-propylene glycol; and

(b) a polar oxygenated solvent having at least one active hydroxyl group and comprising predominantly

(i) an alkylene glycol monoether or monoester,

(ii) a polyalkylene glycol monoether or monoester, or

(iii) a mixture of (i) and (ii).

4,251,424

PLASTICIZED NYLON 612 WITH IMPROVED ZINC CHLORIDE RESISTANCE

Rolando U. Pagilagan, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 30, 1979, Ser. No. 71,195
Int. Cl.³ C08K 5/36
U.S. Cl. 260—30.8 R **6 Claims**

1. A polymeric composition comprising

(a) about from 45 to 88 weight percent nylon 612 having an inherent viscosity of at least about 0.7,

(b) about from 2 to 35 weight percent sulfonamide plasticizer, and

(c) about from 10 to 40 weight percent of an olefin polymer having a tensile modulus of about from 1.0 to 180,000 psi and comprising at least about 10 weight percent based on the olefin polymer of adduct of maleic anhydride or fumaric acid and

(i) a homopolymer of ethylene or

(ii) a copolymer of ethylene, at least one C_3–C_6 α-olefin, and at least one nonconjugated diene.

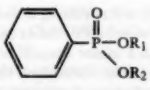
4,251,425

POLYCARBONATE RESIN COMPOSITION

Osamu Ohara, and Kazuo Takiguchi, both of Matsuyama, Japan, assignors to Teijin Chemicals, Ltd., Tokyo, Japan

Filed Dec. 12, 1978, Ser. No. 968,809
Claims priority, application Japan, Sep. 14, 1978, 53-112193
Int. Cl.³ C08K 3/22, 3/30, 5/52, 5/53
U.S. Cl. 260—37 PC **15 Claims**

4. A stabilized colored polycarbonate resin composition comprising a polycarbonate resin, a pigment and/or dye, and a benzenephosphonate of the general formula



(1)

wherein R_1 and R_2, independently from each other, are selected from the class consisting of alkyl groups having 1 to 22 carbon atoms and cycloalkyl groups having 5 to 10 carbon atoms.

7. The composition of one of claims 4 or 5 wherein the pigment is titanium dioxide or cadmium yellow.

4,251,426

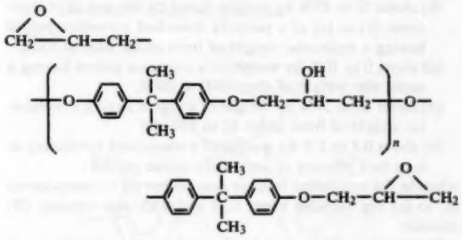
EPOXY RESIN POWDER PRIMER COMPOSITIONS

George R. McClure, Claymont, Del., and Claus Victorius, Media, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 6, 1979, Ser. No. 10,263
Int. Cl.³ C08L 63/02; C08G 59/14
U.S. Cl. 260—37 EP **9 Claims**

1. A thermosetting powder coating composition consisting essentially of finely-divided particles at least 90 percent by weight of which have a maximum particle size not exceeding 100 microns wherein the particles are a blend of

(A) 30–45 parts by weight of an epoxy resin of the formula

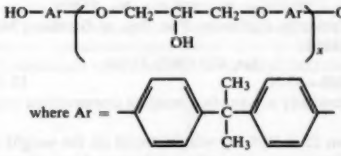


where n is sufficiently large to provide a resin having a Gardner-Holdt viscosity of O–S and an epoxide equivalent weight of 700–850;

(B) 18–40 parts by weight of a phenol-modified epoxy resin which is a resin of the general formula of (A) which has been modified with bisphenol-A and phenol to provide a phenol-modified epoxy resin having an epoxide equivalent weight of 550–675;

(C) 15–30 parts by weight of a resinous curing agent consisting essentially of:

(1) a mixture of compounds of the general formula



and where x is O or a positive number providing a mixture of compounds having an equivalent weight of 200–1000, and

(2) 0.2–5.0 percent by weight, based on the weight of (1), of an accelerator which is a mono or dialkyl imidazole, dialkyl amino methyl phenol, or mixtures of these;

(D) 0.3–2.5 parts by weight, per 100 parts of (A), (B), and (C), of a tertiary amine; and

(E) 0.1–5.0 parts by weight, per 100 parts of (A), (B), and (C), of a flow control agent selected from the group consisting of polyalkyl acrylates polyalkyl methacrylates, fluorinated esters of polyethylene glycol, fluorinated esters of polypropylene glycol, ethyl cellulose, silicones, and mixtures of these.

4,251,427

COATING COMPOSITIONS FROM POLYURETHANES CONTAINING A MOLECULAR SIEVE OF THE SODIUM ALUMINUM SILICATE TYPE

Klaus Recker, Cologne, and Gerd Reinecke, Bergisch-Gladbach, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 18, 1979, Ser. No. 76,703

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1978, 2842805

Int. Cl.³ C08L *75/04*

U.S. Cl. 260—37 N **4 Claims**

1. A coating composition comprising

(A) about 5–30% by weight of a polyisocyanate having a melting point above about 100° C. and

(B) about 95–70% by weight of a polyhydroxyl compound, characterized in that component (B) is a prepolymer containing hydroxyl groups of

(a) a polyisocyanate,

(b) about 50 to 85% by weight, based on the sum of components (b) to (e) of a partially branched polyether polyol having a molecular weight of from about 1000 to 4500,

(c) about 0 to 10% by weight of a polyester polyol having a molecular weight of about 500 to 2000,

(d) about 10 to 30% by weight of a glycol having a molecular weight of from about 62 to 250 and

(e) about 0.5 to 5% by weight of a compound containing at least two primary or secondary amino groups

wherein the equivalent ratio or component (a) to components (b) to (e) lies between about 0.25 and 0.65, and wherein (B) contains

(f) about 1 to 4% by weight of a zeolite molecular sieve, and

(g) about 0.1 to 5% by weight of a catalyst for isocyanate addition reactions.

4,251,428

THERMOSETTING MOLDING COMPOSITIONS CONTAINING POLYURETHANE AND A FIBROUS MATERIAL, AND A PROCESS FOR THE PRODUCTION OF MOLDINGS

Klaus Recker, Cologne; Gerd Reinecke, Berg.-Gladbach, and Karl J. Kraft, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep of Germany

Filed Sep. 24, 1979, Ser. No. 77,979

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921162

Int. Cl.³ C08L *75/04*

U.S. Cl. 260—37 N **12 Claims**

1. Substantially solvent-free molding compositions comprising:

(A) from 25 to 91% by weight, based on the weight of the molding composition, of a polyhydroxyl prepolymer having a viscosity of at least 20 Pa.s/25° C. andcontaining from 0.5 to 7% by weight, based on the prepolymer, of free hydroxyl groups, from 5 to 20% by weight, based on the prepolymer, of urethane groups, and from 0 to 2.5% by weight, based on the prepolymer, of urea groups,

(B) from 4 to 15% by weight, based on the weight of the molding composition, of a polyisocyanate having a melting point above 100° C. and

(C) from 5 to 60% by weight of an organic or inorganic fibrous material having an average fiber length of from 10 to 100 mm,

the NCO/OH equivalent ratio (taking into account any masked NCO-groups) of components A and B amounting to between 1:1 and 1:1.75.

4,251,429

POLYMER BLENDS WITH IMPROVED FLAME RETARDANCE

Gideon Salee, Williamsville, N.Y., assignor to Hooker Chemicals & Plastics Corp., Niagara Falls, N.Y.

Continuation-in-part of Ser. No. 819,539, Jul. 27, 1977, abandoned. This application Dec. 22, 1977, Ser. No. 863,381

Int. Cl.³ C08K *3/40*; C08L *67/02*

U.S. Cl. 260—40 R **23 Claims**

1. In a thermoplastic polymeric composition having improved hydrolytic stability comprising in admixture (a) a polyphenylene sulfide and (b) a linear aromatic polyester, or a mixture of said polyesters, of components comprising a dicarboxylic acid and a bisphenol, the improvement wherein the bisphenol component comprises both a bisphenol wherein at least one carbon atom is substituted with halogen, and a bisphenol devoid of said halogen, said halogen-containing bisphenol being present in the amount of about 1 to less than about 50 mole percent based on the total bisphenol component.

4,251,430

FIRE RESISTANT ADDITIVE FOR HARDENABLE RESIN COMPOSITIONS

Henry K. Kennedy-Skipton, West Kilbride, and Thomas Robertson, Mauchline, both of Scotland, assignors to Imperial Chemical Industries Limited, London, England

Filed Dec. 8, 1978, Ser. No. 968,432

Claims priority, application United Kingdom, Dec. 22, 1977, 53445/77

Int. Cl.³ C01F *7/02*; C08K *3/22*

U.S. Cl. 260—40 R **15 Claims**

1. Hardenable resin compositions containing unsaturated polyester resin hardenable by means of a peroxide catalyst, crosslinking monomer and containing, as an additive to enhance their fire resistance, particulate aluminium hydroxide wherein 12 to 33% by weight of the particles have a diameter less than 1 micron, 45 to 75% by weight of the particles have a diameter in the range from 38 to 150 microns and less than 20% by weight of the particles have a diameter in the range from 1 to 38 microns.

4,251,431

LUBRICATING GREASES

William D. Carswell, Chester; Arthur Youd, Weaverham, and Alexander C. B. MacPhail, Wirral, all of England, assignors to Shell Oil Company, Houston, Tex.

Filed Jan. 16, 1979, Ser. No. 3,826

Int. Cl.³ C10M *3/46, 3/24, 3/14*

U.S. Cl. 252—40.7 **13 Claims**

1. A grease composition comprising a base fluid comprising a major amount of a low-volatility linear perfluoroalkyl polyether fluid together with a minor amount of a methyl polysilicone fluid, and a polytetrafluoroethylene thickener.

2. The composition of claim 1 wherein the perfluoroalkyl polyether has an average molecular weight range from 2,000 to 7,000.

5. The composition of claim 2 which comprises a minor amount of a highly basic mineral oil-free anti-rust additive.

6. The composition of claim 5 wherein the mineral oil-free additive is calcium alkyl salicylate.

4,251,432
METHOD OF PROVIDING CURABLE FLUOROELASTOMER GUMS HAVING COUPLING AGENT COATED PARTICULATE CARBONACEOUS FILLERS

Jon W. Martin, Los Alamitos, Calif., assignor to TRW Inc., Redondo Beach, Calif.

Filed Mar. 6, 1978, Ser. No. 883,760
Int. Cl.³ C08K *9/04, 9/10*
U.S. Cl. 260—42.14 **8 Claims**

1. A method for providing a curable composition which comprises:

(A) coating a solid, particulate carbonaceous filler with a low viscosity hydrocarbon resin coupling agent having a plurality of pendant vinyl groups per molecule contained in a solvent, and evaporating the solvent to form the coated solid, carbonaceous particulate filler;

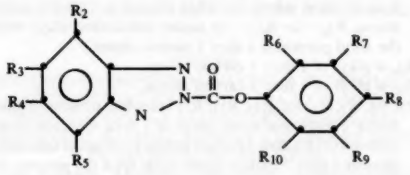
(B) blending the coated solid, carbonaceous particulate filler with a fluoroelastomer gum capable of curing to a solid elastomeric state in the presence of an organic free radical peroxide initiator and an organic free radical peroxide initiator capable of effecting reaction between said fluoroelastomer gum and the pendant vinyl groups of the coupling agent.

4,251,433
HETEROCYCLIC ESTER, ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 751,632, Dec. 17, 1976, Pat. No. 4,116,928, which is a division of Ser. No. 484,846, Jul. 1, 1974, abandoned. This application Jul. 12, 1978, Ser. No. 924,022
Int. Cl.³ C08K *5/34, 5/35*
U.S. Cl. 260—45.8 NT **7 Claims**

1. An organic composition susceptible to ultraviolet light degradation stabilized against such degradation with a stabilizing amount of at least one compound having the formula:



wherein R_2, R_3, R_4 and R_5 are hydrogen, alkyl, alkylaryl, or nitrile; R_6 is hydrogen or alkyl; and R_6, R_7, R_8, R_9 and R_{10} are hydrogen, alkyl, alkoxy, halogen, cycloalkyl, nitrile, aryl, or alkyl-substituted-cycloalkyl.

4,251,434
FLAME RETARDANT POLYCARBONATE COMPOSITION

Victor Mark, Evansville, and Edgar E. Bostick, Mt. Vernon, both of Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Jan. 25, 1979, Ser. No. 6,472
Int. Cl.³ C08K *5/42, 5/45*
U.S. Cl. 260—45.8 RW **6 Claims**

1. A flame-retardant polycarbonate composition comprising a mixture of an aromatic polycarbonate resin and an organic alkali metal salt or organic alkaline earth metal salt, said salts being co-mixed with another organic alkali metal salt or organic alkaline earth metal salt with the proviso that said metal salt mixture contains metal salts having the same organic moiety with at least two different cationic components, said salts being selected from the group consisting of:

alkali metal salts and alkaline earth metal salts of monomeric aromatic sulfonic acids;

alkali metal and alkaline earth metal salts of monomeric halogenated aromatic sulfonic acids;

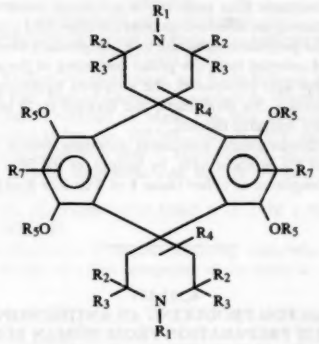
alkali metal and alkaline earth metal salts of sulfonic acids of heterocyclic compounds wherein the heterocyclic compound is selected from the group consisting of a five membered heterocyclic nuclei containing a sulfur hetero atom.

4,251,435
HIGH MOLECULAR WEIGHT PIPERIDINE DERIVATIVES AS UV STABILIZERS

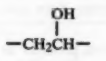
Pyong-Nae Son, Akron, and John T. Lai, Broadview Heights, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Nov. 30, 1979, Ser. No. 99,166
Int. Cl.³ C07D *471/10*; C08K *5/35*
U.S. Cl. 260—45.8 NE **16 Claims**

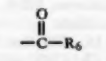
1. A compound having the formula



wherein each R_1 is independently hydrogen, alkyl of 1 to 18 carbons, oxyl group, alkoxy of 1 to 18 carbons, alkenyl of 2 to 6 carbons, alkynyl of 3 to 6 carbons, phenyl, alkaryl of 7 to 14 carbons and being selected from phenyl group substituted with 1 to 3 alkyl groups each having 1 to 4 carbon atoms, aralkyl or 7 to 14 carbons selected from benzyl and lower alkyl substituted benzyl, hydroxyalkyl of 1 to 14 carbons, haloalkyl of 1 to 14 carbons, cyanoalkyl of 2 to 14 carbons, amino or iminoalkyl group of 2 to about 14 carbons, an ether group of 3 to 18 carbons total in the group selected from ethers having alkyl group of 1 to 8 carbons, phenyl lower alkyl substituted phenyl, hydroxy or cyano-substituted alkyl of 4 to 18 carbons on phenyl substituted with hydroxy-lower alkyl, and the group



each R_2 and R_3 is independently alkyl group of 1 to about 12 carbons or R_2 and R_3, together with the ring carbon atom to which they are bonded form cyclohexyl or alkyl substituted cyclohexyl group of 7 to about 14 atoms; each R_4 is independently hydrogen, alkyl or alkoxy group each alkyl having 1 to 18 carbons; each R_5 is independently hydrogen, alkyl of 1 to 18 carbons or the group



where R_6 is alkyl of 1 to 18 carbons, phenyl, alkyl substituted hydroxyphenyl where said alkyl has 1 to 8 carbons or alkaryl

of 7 to 14 carbons, and each R_7 is independently hydrogen or alkyl of 1 to 18 carbons.

7. A composition comprising a low or high molecular weight organic material subject to ultraviolet light degradation and from about 0.05 to about 10 parts by weight per 100 parts of said material of a high molecular weight piperidine of claim 1.

8. A composition of claim 7 wherein said material subject to ultraviolet light degradation is a polymeric material.

4,251,436

INORGANIC FILLER MATERIAL AND POLYMER COMPOSITION CONTAINING THE SAME

Joseph Silberberg, Brooklyn, and Edward D. Weil, Hastings-on-Hudson, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 29, 1978, Ser. No. 974,282
Int. Cl.³ C08K 9/00
U.S. Cl. 260—42.14 **15 Claims**

1. An inorganic filler material for polymeric substrates, said filler containing an effective amount for improved compatibility with the polymeric substrate of a composition containing a compound selected from the group consisting of the saturated hydrocarbyl acid phosphates, the saturated hydrocarbyl acid pyrophosphates, the alkali metal and alkaline earth metal salts thereof, and mixtures thereof.

12. A thermoplastic polymeric substrate which contains from about 5% to about 85%, by weight, of the filler material and the compound of either claim 1 or 2 or 3 or 5 or 6 or 8 or 9.

4,251,437

PROCESS FOR PRODUCING AN ANTIHEMOPHILIC FACTOR PREPARATION FROM HUMAN BLOOD PLASMA BY IRRADIATING WITH ELECTROMAGNETIC WAVES

Mirella E. Rasmussen, Copenhagen; Jorgen V. Jensen, Bagsvaerd, and Jorgen F. Hansen, Rodovre, all of Denmark, assignors to Nordisk Insulinlaboratorium, Gentofte, Denmark

Filed Oct. 26, 1979, Ser. No. 88,671
Claims priority, application Denmark, Nov. 1, 1978, 4875/78
Int. Cl.³ C07G 7/00
U.S. Cl. 260—112 B **7 Claims**

1. A process for producing an antihemophilic factor preparation (AHF) comprising the steps of

thawing deep-frozen human blood plasma, at least partially, by irradiation with electromagnetic waves of a frequency of about 10^8–10^{15} Hz for a period of time and with an energy penetration such that the temperature in the thawed blood plasma does not exceed 10° C. at any point,

centrifuging the thawed product to form a cryoprecipitate,

redissolving the cryoprecipitate in a buffer,

isolating a concentrated solution,

and optionally freeze-drying the concentrated solution.

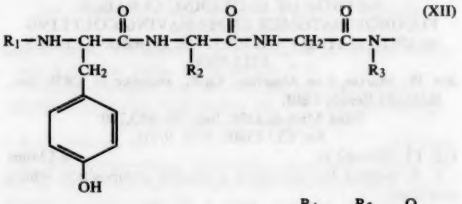
4,251,438

PIPERAZINONE AND PIPERAZINE POLYPEPTIDES

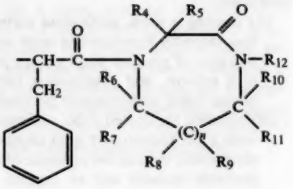
Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Jun. 14, 1979, Ser. No. 48,330
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R **48 Claims**

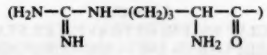
1. A compound of the formula



(XII)



and pharmaceutically acceptable salts thereof where R_1 is a hydrogen atom, methyl group or L-arginyl



R_2 is a hydrogen atom, alkyl of 1 thru 3 carbon atoms, hydroxyalkyl where the alkyl portion is 1 thru 3 carbon atoms or R_{2a}—S—R_{2b}— with the proviso that when R_2 is not a hydrogen atom the carbon atom to which R_2 is attached is of the D configuration,

R_{2a} is alkyl of 1 thru 3 carbon atoms,

R_{2b} is alkyl of 1 thru 3 carbon atoms,

R_3 is a hydrogen atom or methyl group,

R_4 is a hydrogen atom, alkyl of 1 thru 6 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total, hydroxyalkyl where the alkyl portion is 1 thru 4 carbon atoms, R_{4a}—S—R_{4b}— or amino substituted alkyl where the alkyl portion is 2 thru 5 carbon atoms,

R_{4a} is alkyl of 1 thru 3 carbon atoms,

R_{4b} is alkyl of 1 thru 3 carbon atoms,

R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12} are when present independently a hydrogen atom, alkyl of 1 thru 4 carbon atoms, cycloalkyl of 3 thru 5 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total with the proviso that the total number of carbon atoms in all these groups together when present is 0 thru 10,

n is 0 or 1.

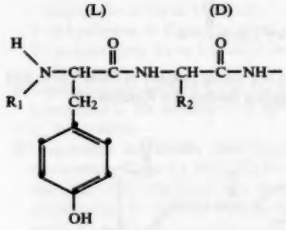
4,251,439

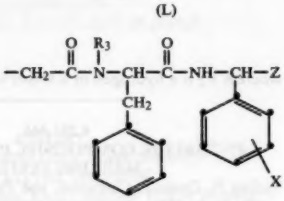
PHARMACOLOGICALLY ACTIVE PEPTIDES

Paul D. Gesellchen, Indianapolis, and David L. Smiley, Greenfield, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 17, 1979, Ser. No. 104,345
Int. Cl.³ C07C 103/52
U.S. Cl. 260—112.5 R **34 Claims**

1. A compound of the formula





and pharmaceutically acceptable non-toxic acid addition salts thereof, in which L and D define the chirality;

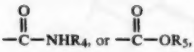
R_1 is hydrogen or C_1–C_3 primary alkyl;

R_2 is C_1–C_4 primary or secondary alkyl, allyl, cyclopropylmethyl, C_1–C_2 hydroxyalkyl, or $—(CH_2)_m—U—CH_3$ in which U is —S— or >S—O and m is 1 or 2;

R_3 is hydrogen, C_1–C_4 primary or secondary alkyl, cyclopropylmethyl, or allyl;

X is hydrogen, halo, hydroxy, C_1–C_3 alkoxy, nitro, C_1–C_3 alkyl, or trifluoromethyl; and

Z is $—CH_2OR_4$,



in which R_4 is hydrogen or C_1–C_3 alkyl and R_5 is C_1–C_3 alkyl.

4,251,440

MONOAZO COMPOUNDS HAVING A THIAZOLIUM OR SUBSTITUTED THIAZOLIUM DIAZO COMPONENT RADICAL AND A 1,4-PHENYLENE COUPLING COMPONENT RADICAL HAVING A C_{1-4}ALKYL GROUP IN EACH ORTHO POSITION

Viktor Kaeppeli, Allschwil, Switzerland, assignor to Sandoz Ltd., Basel, Switzerland

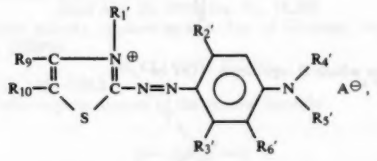
Filed Apr. 29, 1975, Ser. No. 572,849

Claims priority, application Switzerland, May 4, 1974, 6051/74

Int. Cl.[3] **C07C** *107/04;* **C09B** *44/10, 44/20*

U.S. Cl. 260—146 R **7 Claims**

1. A compound of the formula



wherein R_1' is n-C_{1-6}alkyl; n-C_{1-6}alkyl monosubstituted by halo, hydroxy, cyano, C_{1-4}alkoxy or carbamoyl or disubstituted by halo and hydroxy or halo and cyano; or allyl,

each of R_2' and R_3' is independently C_{1-4}alkyl,

R_4' is hydrogen; C_{1-4}alkyl; C_{1-4}alkyl monosubstituted by halo, hydroxy, cyano, phenyl, benzoyloxy, (C_{1-4}alkoxy)-carbonyl, phenylcarbamoyl, phenoxy, di-(C_{1-4}alkyl)carbamoyl, carbamoyl, phenylcarbamoyloxy, di-(C_{1-4}alkyl)-carbamoyloxy or C_{1-4}alkoxy or disubstituted by halo; phenyl; p-(C_{1-4}alkoxy)phenyl or cyclohexyl,

R_5' is hydrogen, C_{1-4}alkyl or C_{1-4}alkyl monosubstituted by halo, hydroxy, cyano, phenyl, benzoyloxy, (C_{1-4}alkoxy)-carbonyl, di-(C_{1-4}-alkyl)carbamoyl, carbamoyl, phenoxy, phenylcarbamoyl or C_{1-4}alkoxy or disubstituted by halo or

R_4' and R_5' taken together and with the nitrogen atom to which they are joined are morpholino,

R_6' is methyl when R_4' and R_5' are hydrogen and is otherwise hydrogen,

R_9 is hydrogen, C_{1-4}alkyl or phenyl,

R_{10} is hydrogen, C_{1-4}alkyl or phenyl, with the proviso that when one of R_9 and R_{10} is phenyl, the other is hydrogen, and

$A^{\ominus}$ is an anion.

4,251,441

PIGMENTS OF MIXTURES OF METHOXYNITROBENZENE-AZO-METHOXY-ACETANILIDES

Heinrich Frölich, Niedernhausen, and Klaüs Hünger, Kelkheim, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

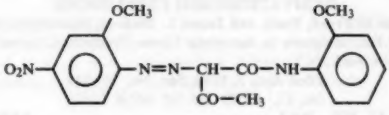
Continuation of Ser. No. 915,768, Jun. 15, 1978, abandoned. This application May 7, 1979, Ser. No. 36,381

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1977, 2727531

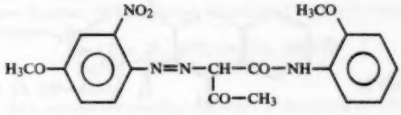
Int. Cl.[3] **C09B** *29/32;* **D06P** *1/18, 1/44, 1/90*

U.S. Cl. 260—193 **2 Claims**

1. A composition of matter consisting essentially of 75 to 85% by weight of a first compound of the formula



and of 25 to 15% by weight of a second compound of the formula



4,251,442

METHOD FOR SYNTHESIS OF PENICILLIN

Yoshiharu Morita; Takaharu Itagaki, both of Yokohama; Tsuyoshi Ito, Machida, and Shigenori Wada, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Nov. 21, 1979, Ser. No. 96,338

Claims priority, application Japan, Dec. 7, 1978, 53-151391

Int. Cl.[3] **C07D** *499/12*

U.S. Cl. 260—239.1 **5 Claims**

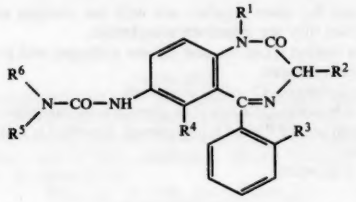
1. A penicillin synthesizing method comprising reacting a silylate of 6-aminopenicillanic acid and a carboxylic acid halide in the presence of an insoluble weakly basic resin having a three-dimensional structure and a dissociation constant of from 10^{-8} to 10^{-11}.

4,251,443
BENZODIAZEPINE DERIVATIVES

Albert E. Fischli, and Andre Szente, both of Riehen, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Aug. 2, 1979, Ser. No. 63,288
Int. Cl.³ C07D *243/24*
U.S. Cl. 260—239.3 D 26 Claims

1. Benzodiazepine derivatives of the general formula



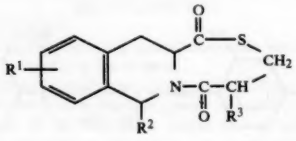
wherein R^1 represents a lower alkyl group, R^2 represents a hydrogen atom or a lower alkyl group, R^3 represents a halogen atom and R^4 represents a hydrogen or halogen atom and either R^5 represents a hydrogen atom or a lower alkyl group and R^6 represents a lower alkyl, lower hydroxyalkyl or lower alkanoyloxyalkyl group and R^5 represents hydrogen atom and R^6 represents unsubstituted or halo or lower alkoxy monosubstituted phenyl or lower alkyl substituted phenyl or R^5 and R^6 together with the nitrogen atom to which they are attached represent a 3-membered to 7-membered heterocycle selected from the group consisting of aziridine, pyrrolidine, N-methylpiperizine, thiazolidine, morpholine and thiomorpholine and pharmaceutically acceptable acid addition salts thereof.

4,251,444
THIAZEPINO-[4,3-b]-ISOQUINOLINE-1,5-DIONE DERIVATIVES AND PRECURSORS

Meier E. Freed, Paoli, and James L. Diebold, Norristown, both of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Apr. 7, 1980, Ser. No. 138,011
Int. Cl.³ C07D *513/04;* A61K *31/38*
U.S. Cl. 260—244.4 4 Claims

1. A compound of the formula:



in which

R^1 is hydrogen, alkoxy of 1 to 6 carbon atoms, alkyl of 1 to 6 carbon atoms or halo;

R^2 is hydrogen, alkyl of 1 to 6 carbon atoms or phenyl; and

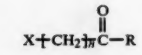
R^3 is hydrogen or alkyl of 1 to 3 carbon atoms.

4,251,445
N-SUCCINIMIDYL HALOACETYL AMINOBENZOATES AS COUPLING AGENTS

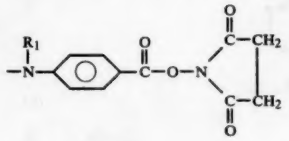
Joel K. Weltman, 164 Summit Ave., Providence, R.I. 02906

Division of Ser. No. 889,726, Mar. 24, 1978, Pat. No. 4,218,539.
This application Nov. 13, 1979, Ser. No. 93,607
Int. Cl.³ C07D *207/46*
U.S. Cl. 260—326.4 4 Claims

1. A compound suitable for use as a coupling reagent to form enzyme conjugates, of the formula:



wherein X is a halogen; n is a whole number of from 1 to 8; and R is an amino-reactive group having the formula of:



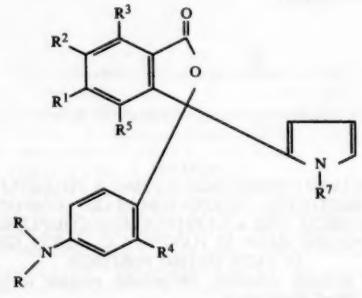
wherein R_1 is a hydrogen or a lower alkyl group.

4,251,446
PHTHALIDE COMPOUNDS, PROCESSES AND MARKING SYSTEMS

Nathan N. Crounse, Cincinnati, and Paul J. Schmidt, Sharonville, both of Ohio, assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 868,583, Jan. 11, 1978, Pat. No. 4,189,171, which is a continuation-in-part of Ser. No. 773,180, Mar. 1, 1977, abandoned. This application Apr. 4, 1979, Ser. No. 27,031
Int. Cl.³ C07D *207/12, 207/24, 209/32, 209/18*
U.S. Cl. 260—326.34 2 Claims

1. A 3-[2-R^4-4-N(R)$_2$-phenyl]-3-(1-R^7-2-pyrrolyl)-4-R^0-5-R^1-6-R^2-7-R^3-phthalide of the formula



wherein:

R^0, R^1, R^2 and R^3 each represent hydrogen or halo or when R^0, R^3 and one of R^1 and R^2 are each hydrogen, the other of R^1 and R^2 represents nitro, amino, acetamido, dialkylamino wherein alkyl is non-tertiary C_1 to C_4 alkyl or

in which B represents —OY or

wherein

Y is hydrogen, an alkali metal cation, an ammonium cation, a C_1 to C_{18} mono-, di- or trialkylammonium cation, C_1 to C_{18} alkyl, C_2 to C_{18} alkenyl, benzyl or benzyl

substituted in the benzene ring thereof by C_1 to C_{12} alkyl, halo or C_1 to C_8 alkoxy,

Y' is hydrogen or C_1 to C_{18} alkyl,

Y'' is hydrogen, C_1 to C_{18} alkyl or C_4 to C_{12} N,N-dialkylamino;

R represents non-tertiary C_1 to C_4 alkyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl,

R^4 represents acetamido, dialkylamino in which alkyl is non-tertiary C_1 to C_4 alkyl, C_2 to C_5 acyloxy, and when one of R^1 or R^2 represents any of said carboxy or carbonyl substituents, R^4 further represents hydrogen, C_1 to C_3 alkyl, C_1 to C_4 alkoxy or halo; and

R^7 represents hydrogen, C_1 to C_3 alkyl or phenyl.

4,251,447

PRODUCTION OF MALONIC ANHYDRIDES AND DERIVATIVES THEREOF

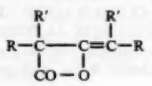
Charles L. Perrin, La Jolla, Calif., assignor to The Regents of the University of California, Los Angeles, Calif.

Filed May 11, 1978, Ser. No. 904,830

Int. Cl.³ C07D *305/00*

U.S. Cl. 260—333 **9 Claims**

1. A process for producing malonic anhydride and substituted malonic anhydrides, which comprises subjecting an enol-lactone dimer of a ketene to ozonolysis in an inert solvent, said enol-lactone dimer of a ketene having the general formula



where R and R' are selected from the group consisting of hydrogen, alkyl, cycloalkyl, a heterocyclic group selected from the class consisting of pyridyl, tetrahydropyranyl and tetrahydrofuryl, aryl, and where R and R' can be the same or different, and where R and R' together can constitute the atoms necessary to form a carbocyclic ring, the temperature of the reaction mixture being maintained below about 0° C., and forming a malonic anhydride.

4,251,448

MACROCYCLIC DIESTERS

Kurt Bauer; Alfred Körber, and Karl-Heinz Bork, all of Holzminden, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

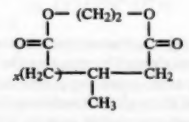
Filed Aug. 30, 1979, Ser. No. 71,350

Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929864

Int. Cl.³ C07D *321/00*

U.S. Cl. 260—340.2 **1 Claim**

1. Macrocyclic diesters of the general formula:



wherein x is an integer from 8 to 11.

4,251,449

METHOD OF MAKING A SOLID CRYSTALLINE COMPOSITION CONSISTING ESSENTIALLY OF CALCIUM ASCORBATE

Clarence Schreur, 14 Glenoaks, Prescott, Ariz. 86301

Continuation-in-part of Ser. No. 595,234, Jul. 11, 1975, abandoned. This application Feb. 5, 1979, Ser. No. 9,480

Int. Cl.³ C07D *307/62*

U.S. Cl. 260—343.7 **6 Claims**

1. A method of preparing calcium ascorbate which method comprises:

reacting ascorbic acid and calcium carbonate at a temperature of about 40°–60° C. in the presence of liquid water, said water being present, at the start of the reaction, in an amount of about 25% and about 50% of the theoretical ascorbic acid solution requirement at about 60° C., while maintaining said reaction zone saturated with carbon dioxide, produced as a reaction side-product, and a layer of carbon dioxide foam blanketing said reaction zone, said ascorbic acid and said water first being intermingled in the reaction zone and then said calcium carbonate being added incrementally to said reaction zone substantially over said reaction time, the mole ratio of said calcium carbonate reactant to said ascorbic acid reactant being between about 1.02/2 and about 1.15/2 where thestochiometric ratio is 1.00/2, to obtain, when the reaction has terminated itself as evidenced by subsiding of said foam, a syrupy reaction product solution, which product consists essentially of calcium ascorbate and said syrupy solution contains between about 50% and about 75% of dissolved calcium ascorbate.

4,251,450

NITROGEN TRANSHALOGENATION PROCESS

Leroy O. Krbechek, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Feb. 19, 1980, Ser. No. 122,398

Int. Cl.³ C07J *9/00*

U.S. Cl. 260—397.1 **28 Claims**

1. A process for the transhalogenation of an amido compound to form the corresponding N-haloamide comprising contacting the amido compound with an N-haloimide.

4,251,451

PROCESS FOR PRODUCING A MIXTURE OF BRANCHED AND LINEAR CARBOXYLIC ACID SALTS

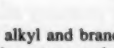
Walter L. Magee, Danbury, Conn., and Arthur C. Bayer, Yorktown Heights, N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 26, 1979, Ser. No. 106,979

Int. Cl.³ C11C *1/00*; C07C *51/295*

U.S. Cl. 260—413 **10 Claims**

1. In a process for reacting a mixture of branched and linear alcohols of the formula RCH_2OH with a caustic of the formula $M(OH)_n$ producing a reaction mixture containing carboxylic acid salts of the formula:



wherein:

R is selected from linear alkyl and branched alkyl of from about 1 to about 19 carbon atoms and composed solely of carbon and hydrogen,

M is selected from the group consisting of lithium, sodium, potassium, magnesium, calcium and barium, n is a valence factor for M, being 1 where M is selected from lithium, sodium and potassium and 2 where M is selected from magnesium, calcium and barium,

and liberating hydrogen, the improvement comprising introducing into the reaction mixture at about a time when a

significant evolution of hydrogen from the reaction mixture begins to occur, an effective amount of an inert diluent for the reaction mixture, wherein the effective amount is sufficient to maintain fluidity of the reaction mixture.

4,251,452
MANGANESE (II) COMPLEXES

Charles A. McAuliffe, Altrincham; William Levason, Southampton, and Francis P. McCullough, Cheadlehulme, all of England, assignors to National Research Development Corporation, London, England

Filed Feb. 28, 1979, Ser. No. 16,081

Claims priority, application United Kingdom, Mar. 3, 1978, 08547/78; Sep. 25, 1978, 37949/78

Int. Cl.³ C07F *13/00*

U.S. Cl. 260—429 R **9 Claims**

1. A compound of the formula I,

$$Mn^{II}LX_2 \qquad I$$

wherein L represents a monodentate ligand of the formula IA,

$$PR^1R^2R^3 \qquad II$$

in which formula R^1, R^2 and R^3, which may be identical or different, represent alkyl, cycloalkyl, or aryl groups or hydrogen, provided that no more than two of the groups R^1, R^2 and R^3 are aryl groups and that at least one of the groups R^1, R^2 and R^3 is an alkyl, cycloalkyl or aryl group; and wherein X which is a species capable of existing as an anion, represents —Cl, —Br, —I, —CN, $—NO_2$, $—NO_3$, —OH, —NCS or —NCO.

9. A process for the preparation of a gas sorbent compound of the formula I,

$$Mn^{II}LX_2 \qquad I$$

comprising: reacting a monodentate ligand of the formula IA

$$PR^1R^2R^3 \qquad IA$$

in which formula R^1, R^2 and R^3, which may be identical or different, represent alkyl, cycloalkyl, or aryl groups or hydrogen, provided that no more than two of the groups R^1, R^2 and R^3 are aryl groups and that at least one of the groups R^1, R^2 and R^3 is an alkyl, cycloalkyl or aryl group; with an anhydrous salt of the formula

$$Mn^{II}X_2$$

in which formula X, which is a species capable of existing as an anion, represents —Cl, —Br, —I, —CN, $—NO_2$, $—NO_3$, —OH, —NCS or —NCO; under anhydrous conditions; and in the absence of oxygen.

4,251,453
PRODUCTION OF ALUMINUM ALKYLS

Harry D. Garrison, Sulphur, La., assignor to Conoco, Inc., Ponca City, Okla.

Continuation-in-part of Ser. No. 11,607, Feb. 12, 1979, abandoned. This application Aug. 22, 1979, Ser. No. 68,779

Int. Cl.³ C07F *5/06*

U.S. Cl. 260—448 A **9 Claims**

1. A method for producing aluminum alkyls substantially free of solid contaminants, comprising

(a) reacting aluminum, hydrogen and lower olefins to obtain a crude aluminum alkyl reaction product containing solid contaminants,

(b) passing the crude aluminum alkyl reaction product into a holding vessel under inert pressure while

(c) continuously circulating the crude aluminum alkyl reaction product from said holding vessel through a tubular filter having a microporous wall, unfiltered reaction product returning to said holding vessel, while recovering aluminum alkyls substantially free of solid contaminants from the outer downstream surface of the microporous wall of the tubular filter.

4,251,454
BENZYLPYRIMIDINES

Ivan Kompis, Oberwil; Gerald Rey-Bellet, Basel, and Guido Zanetti, Füllinsdorf, all of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

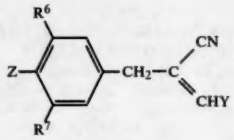
Continuation of Ser. No. 781,089, Mar. 25, 1977, abandoned, which is a division of Ser. No. 642,303, Dec. 19, 1975, Pat. No. 4,039,543. This application Jul. 24, 1978, Ser. No. 927,303

Claims priority, application Switzerland, Dec. 24, 1974, 17287/74; Oct. 27, 1975, 13883/75

Int. Cl.³ C07D *121/66, 121/72*

U.S. Cl. 260—465 E **3 Claims**

1. A compound of the formula



wherein R^6 and R^7 each, independently, is amino, $—NHR^3$, $—N(R^3)_2$, wherein R^3 is C_{1-4}-alkyl; Y is phenylamino; and Z is chlorine.

4,251,455
CONTINUOUS CLOSED LOOP NITRATION OF POLYHYDRIC ALCOHOLS

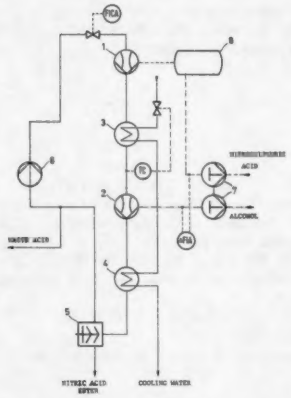
Hans-Jürgen Gebauer, Cologne, Fed. Rep. of Germany, assignor to Josef Meissner GmbH & Co., Cologne, Fed. Rep. of Germany

Filed May 3, 1979, Ser. No. 35,754

Claims priority, application Fed. Rep. of Germany, May 12, 1978, 2820890

Int. Cl.³ C07C *77/02*

U.S. Cl. 260—467 **5 Claims**



1. A process for the continuous manufacture of a nitric acid ester of a polyhydric alcohol by reacting the polyhydric alcohol with nitrating acid, comprising circulating a stream of waste nitrating acid through a closed loop, injecting nitrosulphuric acid into said circulating stream, cooling the stream downstream of the injection, feeding the alcohol via a mixer

into the cooled stream, cooling the stream to remove heat produced by reaction, and separating nitrated polyhydric alcohol from the loop, along with sufficient waste acid to keep the volume in the loop substantially constant, circulation being carried out at a rate such that the average residence time of waste acid in the loop is less than about 15 minutes.

4,251,456

METHOD FOR TREATING EFFLUENT GAS FROM SULFONATION PROCESS

Burton Brooks, Bellevue, Wash., assignor to The Chemithon Corporation, Seattle, Wash.

Filed Mar. 29, 1979, Ser. No. 24,895
Int. Cl.³ C07C *143/24, 143/02*
U.S. Cl. 260—505 R **15 Claims**

1. In the method which comprises sulfonating a liquid organic feed stock by contacting said liquid feed stock with a gas mixture containing air and SO_3 derived from a sulfur burning step and separating the resulting liquid sulfonated product from a gas phase containing residual air, unreacted SO_3, vapors from said feed stock and SO_2, the steps of:

(1) burning sulfur in the presence of said separated gas phase to produce additional SO_2;

(2) catalytically treating the gas phase produced in step (1) to convert SO_2 contained therein to SO_3, said sulfur burning and catalytic treating steps being performed downstream of said sulfonating step and constituting said sulfur burning step from which is derived said SO_3 with which said liquid organic feed stock is sulfonated;

(3) treating the gas from step (2) with lean oleum to absorb in said oleum a substantial proportion of the SO_3 contained therein, producing SO_3-rich oleum;

(4) desorbing SO_3 from said SO_3-rich oleum to produce SO_3 vapor and lean oleum;

(5) mixing the SO_3 vapor produced in step 4 with air;

(6) contacting said liquid organic feed stock with the mixture of air and SO_3 produced in step (5);

(7) using at least a portion of the lean oleum produced in step (4) for absorbing SO_3 in step (3);

(8) removing SO_3 remaining in the gas after step (3) and then discharging said gas to the atmosphere.

4,251,457

PROCESS FOR PURIFICATION OF THE OFF-GASES RESULTING FROM THE PRODUCTION OF BENZOYL CHLORIDE FROM PHOSGENE

Vladimir I. Kondratenko, bulvar Verkhovnogo, Soveta, 10a, kv. 57; Ivan N. Novikov, ulitsa Malyshko, 19a, kv. 57; Isai N. Feldman, ulitsa Korneichuka, 38a, kv. 62, all of Kiev; Boris G. Moiseev, ulitsa Vatutina, 15, kv. 62, Dzerzhinsk Gorkovskoi oblasti; Valery Y. Kolesnikov, ulitsa Sverdlova, 84a, kv. 52, Dzerzhinsk Gorkovskoi oblasti; Valentin I. Nefedov, ulitsa Popova, 14, kv. 8, Dzerzhinsk Gorkovskoi oblasti, and Jury A. Fudaler, ulitsa Griboedova, 27, kv. 34, Dzerzhinsk Gorkovskoi oblasti, all of U.S.S.R.

Filed Jun. 11, 1979, Ser. No. 47,250
Claims priority, application U.S.S.R., Jul. 24, 1978, 2649052
Int. Cl.³ C07C *63/10*
U.S. Cl. 260—544 K **2 Claims**

1. A process for purification of the offgases resulting from the production of benzoyl chloride by phosgenation of benzoic acid by phosgene comprising the steps of selectively absorbing phosgene in the off-gases with benzoyl chloride at a temperature from 1° to 40° C. and recycling the recovered phosgene to the production of benzoyl chloride.

4,251,458

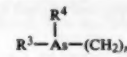
PROCESS FOR PREPARING CARBOXYLIC ACID ANHYDRIDES

Joseph Pugach, Ho-Ho-Kus, N.J., assignor to Halcon Research and Development Corporation, New York, N.Y.

Filed Oct. 2, 1979, Ser. No. 81,304
Int. Cl.³ C07C *51/54, 51/56*
U.S. Cl. 260—546 **10 Claims**

1. In a process for the preparation of an anhydride of a monocarboxylic acid which comprises reacting carbon monoxide, a halide which is an iodide or bromide and a compound selected from the group consisting of a carboxylate ester and a hydrocarbyl ether under substantially anhydrous conditions in the presence of a Group VIII noble metal catalyst the improvement which comprises carrying out said process in the presence of a multiple promoter comprising at least one metal of Group VIB of the Periodic Table, or their compounds, an an arsine of the formula:

wherein R and R^1 are monocyclic aryl groups or alkyl groups and R^2 is the radical



a momocyclic aryl group or an alkyl group, and wherein R^3 and R^4 are each a monocyclic aryl group or an alkyl group, with the proviso that at least one of R, R^1 and R^2 is a monocyclic aryl group, n being zero or a digit from 1–20, said reacting being carried out at a temperature of 25°–350° C. with a carbon monoxide partial pressure of 1–10,000 psi.

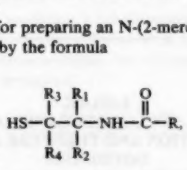
4,251,459

PREPARATION OF N-(2-MERCAPTOETHYL)ALKANAMIDES

Kim G. Bargeron; Thad S. Hormel; David K. Winegardner, and Bruce G. Lovelace, all of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 11, 1979, Ser. No. 56,474
Int. Cl.³ C07C *102/00, 85/00*
U.S. Cl. 564—215 **6 Claims**

1. In a process for preparing an N-(2-mercaptoethyl)alkanamide represented by the formula



wherein R is alkyl and R_1–R_4 are each independently hydrogen, lower alkyl, hydroxy-substituted lower alkyl or phenyl by reacting a 2-alkyl-2-oxazoline with hydrogen sulfide under essentially anhydrous conditions, the improvement comprising reacting in a continuous process, the hydrogen sulfide with the 2-alkyl-2-oxazoline in a molar ratio from at least about 1.0 to about 1.2 moles of hydrogen sulfide per mole of the oxazoline, wherein both the reactants are maintained in the liquid phase throughout the reaction by the application of superatmospheric pressure and the reaction temperature is in the range from about 100° to about 185° C.

4,251,460
PROCESS FOR PRODUCTION OF DIMETHYLFORMAMIDE

Takeyuki Fujita, Yokosuka; Masaru Suto, and Kazumoto Ogura, both of Yokohama, all of Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Dec. 19, 1979, Ser. No. 105,370
Claims priority, application Japan, Dec. 27, 1978, 53-160075
Int. Cl.³ C07C *103/36*
U.S. Cl. 564—132 12 Claims

1. A process for producing dimethylformamide comprising:
(a) reacting methanol and ammonia in a methylamine synthesizing column in the presence of a dehydration catalyst to produce a mixture of mono-, di- and tri-methylamines;
(b) introducing the reaction product into a first distillation column wherein unreacted ammonia and monomethylamine is distilled as an azeotropic mixture with trimethylamine to yield a mixture composed mainly of dimethylamine, trimethylamine and water;
(c) introducing the mixture of dimethylamine, trimethylamine and water into a second distillation column wherein water containing a small amount of high boiling point components is removed to yield a dimethylamine-trimethylamine mixture; and
(d) introducing the dimethylamine-trimethylamine mixture into a dimethylformamide synthesizing column wherein dimethylamine is reacted with carbon monoxide in the presence of a catalyst and unreacted carbon monoxide and trimethylamine are separated to yield dimethylformamide.

4,251,461
PROCESS FOR REDUCING ACID IMPURITY LEVELS IN N-(TERTIARYAMINOALKYL)ACRYLAMIDE PRODUCTION

David R. Livingston, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Jan. 17, 1980, Ser. No. 112,759
Int. Cl.³ C07C *103/64*
U.S. Cl. 564—204 10 Claims

1. An improved, noncatalytic process for the preparation of N-(tertiaryaminoalkyl)acrylamides which comprises subjecting a β-amino propionamide to a temperature of about 180° C. to about 300° C. in the absence of a catalyst after the β-amino propionamide has been stored in a holding tank at a temperature of about 120° C. to about 240° C. and a pressure of about 300 mm Hg to about 1550 mm Hg for approximately eight to seventy-two hours.

4,251,462
AMINOMETHYL CYCLODODECANES, A PROCESS FOR THEIR PRODUCTION AND THEIR USE AS CORROSION INHIBITORS

Rudolf Braden, Odenthal, and Kuno Wagner, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Bayerwerk, Fed. Rep. of Germany

Filed Aug. 27, 1979, Ser. No. 69,700
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1978, 2838755
Int. Cl.³ C07C *83/00*
U.S. Cl. 564—455 12 Claims

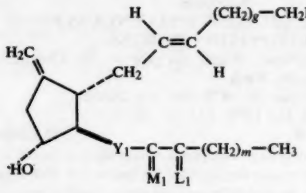
1. Aminomethyl cyclododecanes selected from the group consisting of aminomethyl cyclododecanes, bis-(aminomethyl)-cyclododecanes, tris-(aminomethyl)-cyclododecanes and mixtures thereof.

4,251,463
2-DECARBOXY-2-AMINOMETHYL-9-DEOXY-9-METHYLENE-5,6-DIDEHYDRO-PGF$_1$ COMPOUNDS

Gordon L. Bundy, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 35,144, May 1, 1979. This application Jan. 28, 1980, Ser. No. 115,967
Int. Cl.³ C07C *87/451*
U.S. Cl. 564—454 2 Claims

1. A prostaglandin analog of formula VI



VI

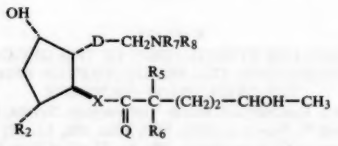
wherein Y_1 is trans—CH=CH—, —C≡C—, —CH_2CH_2—, or cis—CH=CH—;
wherein M_1 is α—R_5:β—OH or α—OH:β—R_5, wherein R_5 is hydrogen or methyl;
wherein L_1 is α—R_3:β—R_4, α—R_4:β—R_3, or a mixture of α—R_3:β—R_4 and α—R_4:β—R_3 wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same or different, with the proviso that one of R_3 and R_4 is fluoro only when the other is hydrogen or fluoro;
wherein g is 3, 4, or 5; wherein m is one to 5, inclusive; and wherein L_2 and L_3 are hydrogen or alkyl of one to 4 carbon atoms, inclusive, being the same or different, or a phramcologically acceptable acid addition salt thereof.

4,251,464
2-DECARBOXY-2-AMINOMETHYL-19-HYDROXY-6-OXO-PGE$_1$ COMPOUNDS

John C. Sih, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 54,811, Jul. 5, 1979, Pat. No. 4,225,508. This application Mar. 3, 1980, Ser. No. 126,488
Int. Cl.³ C07C *91/14, 91/40*
U.S. Cl. 564—453 1 Claim

1. A prostacyclin-type compound of the formula



wherein D is —$(CH_2)_2$—CO-CH_2—L_2— or —CH_2—CO-CH_2—L_3— wherein L_2 is
(1) —$(CH_2)_j$, wherein j is one to 4, inclusive,
(2) —$(CH_2)_q$—CF_2—, wherein q is one, 2, or 3, or
(3) —CH=CH—,
wherein L_3 is
(1) —$(CH_2)_n$—, wherein n is one to 5, inclusive,
(2) —$(CH_2)_p$-CF_2—, wherein p is 2, 3, or 4, or
(3) -CH_2-CH=CH—;
wherein Q is oxo, α-H:β-H, α-OH:β-R_4, or αR_4:β-OH, wherein R_4 is hydrogen or alkyl of one to 4 carbon atoms, inclusive,
wherein R_2 is hydrogen, hydroxyl, or hydroxymethyl;
wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with

the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro;
wherein R_7 and R_8 are hydrogen, alkyl of one to 12 carbon atoms, inclusive, benzyl, or phenyl, being the same or different;
wherein X is
(1) trans—CH=CH—,
(2) cis—CH=CH—,
(3) —C≡C—, or
(4) $-CH_2CHP_2-$.

4,251,465
PROCESS FOR PREPARING ALKYLDIMETHYLAMINES

Harold E. Swift, Gibsonia; Robert A. Innes, Monroeville, both of Pa., and Phillip Adams, Murray Hill, N.J., assignors to Gulf Research & Development Company, Pittsburgh, Pa. and Kewanee Industries, New York, N.Y.

Filed Dec. 31, 1979, Ser. No. 108,645
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—479 **19 Claims**

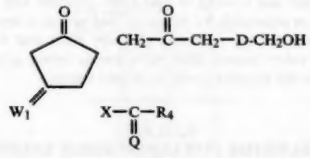
1. In a process wherein an alcohol or mixture of alcohols is reacted with dimethylamine in the presence of a copper catalyst to obtain alkyldimethylamine or alkenyldimethylamine by passing said reactants through a fixed bed of such catalyst, the improvement which comprises substantially decreasing the formation of byproduct alkylmonomethylamine by passing said reactants through a fixed bed containing said catalyst mounted on a magnesium aluminate spinel.

4,251,466
2-DECARBOXY-2-HYDROXYMETHYL-6-KETO-PGE$_1$ COMPOUNDS

Udo F. Axen, Plainwell, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 829,679, Sep. 2, 1977, which is a continuation-in-part of Ser. No. 755,675, Dec. 30, 1976, abandoned. This application Aug. 27, 1979, Ser. No. 70,233
Int. Cl.³ C07C *49/743, 49/753, 49/747*
U.S. Cl. 568—330 **37 Claims**

1. A compound of the formula

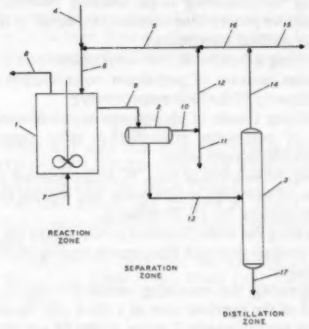


wherein W_1 is α-OH:β-H, α-Hβ-OH, α-H:β-H, methylene, or α-CH_2OH:β-H;
wherein Q is oxo, α-H:β-H, α-R_8:βα-OH, or α-OH:β-R_8, wherein R_8 is hydrogen or alkyl of one to 4 carbon atoms, inclusive;
wherein R_4 is
(1) —C(R_5)(R_6)—C_gH_{2g}—CH_3
(2) —C(R_5)(R_6)—Z—(Ph) or
(3) cis—CH_2—CH=CH—CH_2CH_3,
wherein C_gH_{2g} is alkylene of one to 9 carbon atoms, inclusive, with one to 5 carbon atoms, inclusive, in the chain between —CR_5R_6— and terminal methyl, wherein R_5 and R_6 are hydrogen, alkyl of one to 4 carbon atoms, inclusive, or fluoro, being the same or different, with the proviso that one of R_5 and R_6 is fluoro only when the other is hydrogen or fluoro and the further proviso that neither R_5 nor R_6 is fluoro when Z is oxa (—O—); wherein Z represents an oxa atom (—O—) or C_jH_{2j} is a valence bond or alkylene of one to 9 carbon atoms, inclusive, with one to 6 carbon atoms, inclusive between CR_5R_6— and the (Ph); wherein (Ph) is phenyl or phenyl substituted by (T)s,
wherein T is alkyl of one to 4 carbon atoms, inclusive, fluoro, chloro, trifluoromethyl, or —OR_7— wherein R_7 is alkyl of one to 4 carbon atoms, inclusive, and
wherein s is zero, one, 2 or 3, with the proviso that not more than two T's are other than alkyl and when s is 2 or 3 the T's are either the same or different;
wherein D is
(1) $-(CH_2)_d-C(R_2)_2-$
(2) $-CH_2-O-CH_2-Y-$ or
(3) $-CH_2CH=CH-$
wherein d is zero to 5, R_2 is hydrogen, methyl, or fluoro, being the same or different with the proviso that one R_2 is not methyl when the other is fluoro, and Y is a valence bond, $-CH_2-$ or $-(CH_2)_2-$, and
wherein X is
(1) trans—CH=CH—
(2) cis—CH=CH—
(3) —C≡C—
(4) $-CH_2CH_2-$.

4,251,467
CONTINUOUS PREPARATION OF CHLOROACETONE

Victor P. Kurkov, San Rafael, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 584,225, Jun. 5, 1975, abandoned, which is a continuation-in-part of Ser. No. 418,166, Nov. 21, 1973, abandoned. This application Sep. 2, 1976, Ser. No. 719,799
Int. Cl.³ C07C *45/63*
U.S. Cl. 568—393 **12 Claims**



1. A process of preparing 1,3-dichloroacetone which comprises contacting molecular chlorine with an aqueous mixture of acetone, monochloroacetone, or mixtures thereof and an iodine-containing promoter.

4,251,468
RECOVERY OF TRIARYLBORANES

Nicholas Nazarenko, Orange, Tex., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 21, 1979, Ser. No. 106,251
Int. Cl.³ C07F *5/02*
U.S. Cl. 568—1 **6 Claims**

1. In a process for the recovery of triarylboranes by neutralizing the alkali metal hydroxide salt of said borane, the improvement which comprises using carbon dioxide the effect the neutralization.

4,251,469
SULPHUR-CONTAINING ESTERS OF PHOSPHORIC ACID

Horst Zinke, Ernsthofen, and Joachim Lorenz, Bensheim, both of Fed. Rep. of Germany, assignors to CIBA-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 881,211, Feb. 27, 1978. This application Sep. 13, 1979, Ser. No. 74,846

Claims priority, application Switzerland, Mar. 10, 1977, 3029/77

Int. Cl.³ C07F 9/165; C10M 1/48

U.S. Cl. 260—942 **8 Claims**

1. A compound of formula I

$$XP(SC_nH_{2n}COR)_3 \quad (I)$$

wherein

X represents an oxygen or sulphur atom,

n is an integer from 1 to 6, and R represents the group R^1—O—, wherein R^1 represents alkyl, alkoxyalkyl or trimethylcyclohexyl.

4,251,470
PROCESS FOR PREPARING DI[P-(1,1,3,3-TETRAMETHYLBUTYL)PHENYL] PHOSPHORIC ACID ESTER

Jeffrey D. Owen, and Harold M. Brown, both of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Division of Ser. No. 890,758, Mar. 27, 1978, abandoned. This application Oct. 26, 1979, Ser. No. 88,698

Int. Cl.³ C07F 9/09

U.S. Cl. 260—990 **2 Claims**

1. A method for preparing di [p-(1,1,3,3-tetramethylbutyl) phenyl] phosphoric acid having at least 96 percent purity comprising the following steps, utilizing reactant quantities having relative proportions substantially equal to those stated herein, the method comprising:

a. dissolving 2.5 moles of tert-octyl phenol and 2.5 moles of pyridine mixture of petroleum ether/diethyl ether (approximately 95%/15% respectively);

b. dissolving 1 mole of phosphorus oxytrichloride in a mixture of petroleum ether-diethyl ether (approximately 85%/15% respectively);

c. adding the solution of step "b" to the solution of step "a", while refluxing the combination, and stirring the resulting white mixture for 15–30 minutes;

d. separating the white floculant precipitate of the mixture of the previous step with filter means equivalent to 0.3μ pore capability;

e. evaporating the remaining sauterine-colored clear oily liquid of the previous step to a thick oily liquid;

f. adding approximately 2 moles of NaOH and diluting with diethyl ether while stirring continuously for approximately ten minutes;

g. extracting the organic ether phase (top layer) of the previous mixture for use with the following steps;

h. adding water and approximately 0.1 mole of NaOH to the previous organic phase, while stirring continuously;

i. adding an aqueous solution of 1 mole $BaCl_2 \cdot 2H_2O$ to the mixture of the previous step, forming a white precipitate;

j. filtering the white precipitate of step i and washing the same with benzene;

k. dissolving the washed precipitate in pretroleum ether;

l. adding a volume of 1 N HCl substantially equal to the volume of the previous step, to the dissolved precipitate and stirring for about an hour;

m. separating the organic phase of the mixture of step l (top layer) and washing the same with 1 N HCl until no white $BaSO_4$ is formed upon addition of H_2SO_4 to the bottom aqueous phase;

n. evaporating the organic phase to form a white product;

o. dissolving this product in benzene and washing with ethylene glycol in a separatory funnel;

p. washing the benzene layer with 1 N HCl in a separatory funnel and drying over anhydrous Na_2SO_4;

q. removing the benzene solvent to isolate the final product.

4,251,471
CARBURETOR FOR INTERNAL COMBUSTION ENGINES WITH AN ACCELERATION PUMP

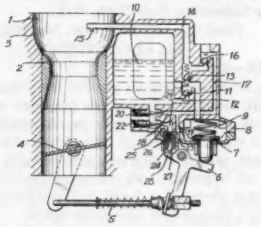
Dieter Schwander, Ratingen; Hermann Strell, Moers, and Bernd Findeisen, Dusseldorf, all of Fed. Rep. of Germany, assignors to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Aug. 28, 1979, Ser. No. 70,695

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1978, 2841951

Int. Cl.³ F02M 7/08

U.S. Cl. 261—34 A **3 Claims**



1. A carburetor for internal combustion engines with an acceleration pump comprising: a pump chamber, a float chamber; a suction duct connection said pump chamber to said float chamber, said suction duct having a suction valve; a throttle and an intake line section upstream of said throttle; a delivery duct having a pressure valve and a calibrated injection opening, said delivery duct connecting said pump chamber to said intake line section, said acceleration pump having a displacement member; linkage means and lever means, said displacement member being actuated via said linkage means by said lever means depending on the position of said throttle; an adjustment screw; a first flow duct communicating with said delivery duct and leading to said float chamber and having a cross section adjustable by means of said screw; a second flow duct communicating with said delivery duct and having an inlet with valve means, said valve means being actuated responsive to the angular position of said throttle.

4,251,472
CARBURETOR FOR COMBUSTION ENGINES

Martin Dammann, Herten B. Roermond, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed May 11, 1979, Ser. No. 38,308

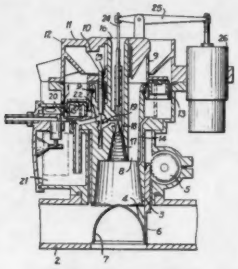
Claims priority, application Fed. Rep. of Germany, Jul. 19, 1978, 2831605

Int. Cl.³ F02M 9/06

U.S. Cl. 261—44 C **3 Claims**

1. A carburetor for combustion engines comprising: a carburetor housing; a mixing chamber in said carburetor housing; an air throttle including a tube-and-throttle unit arranged axially parallel to and longitudinally shiftable with respect to a bypass air duct and said mixing chamber upstream of a pre-diffuser; a selectively operable mixture throttle including a tube-and-throttle unit arranged axially parallel to and longitudinally shiftable relative to said mixture chamber; said mixing chamber being bounded downstream by said mixture throttle and upstream by said air throttle; an intake air passage controlled by said air throttle and actuated by pressure prevailing in said mixing chamber; said bypass air duct discharging centrally in said mixing chamber; a conical flow-guiding member concentric to and cooperating with said mixture throttle and being rigidly mounted in said intake air passage; a fuel supply dis-

charging into said bypass air duct; a first nozzle pin cooperating with said air throttle; a first fuel jet having a cross section controlled by said nozzle pin; a second fuel jet downstream of



said first fuel jet; an analog magnet; said second fuel jet having a cross section controlled by said analog magnet as a function of engine operating parameters.

4,251,473

AERATING APPARATUS

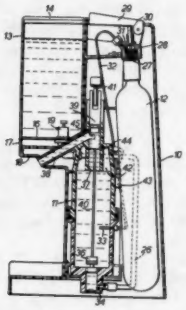
Guy Gilbey, Empingham, United Kingdom, assignor to Sodastream Limited, Peterborough, England

Continuation of Ser. No. 927,913, Jul. 25, 1978, abandoned. This application Aug. 24, 1979, Ser. No. 69,538

Claims priority, application United Kingdom, Jul. 29, 1977, 32041/77; May 31, 1978, 32041/77; Feb. 2, 1978, 04328/78

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—51 **4 Claims**



1. An apparatus for carbonating water, comprising a pressure vessel and a header tank containing a quantity of fresh water, said vessel having a bottom inlet and an outlet in an upper region thereof, a water feed tube connecting said tank into said vessel, discharge means communicating with said outlet through which carbonated water is discharged from said vessel, an injection nozzle extending into said vessel for admitting CO_2 from a pressurized CO_2 supply into said vessel, said vessel defining a head space in said upper region, said inlet and said outlet being respectively defined by inlet and outlet axial valve bores, spaced inlet and outlet valve pistons being rigidly interconnected to form a unitary plunger, said pistons respectively having opposed equal pressure surfaces facing one another and being directly exposed to the interior of said vessel whereby said plunger is substantially pressure balanced, and said pistons respectively being disposed for sliding movement in said bores for opening and closing said inlet and said outlet, pressure release valve means at said upper region for connecting said head space to atmosphere, means for admitting CO_2 under pressure to the interior of said vessel and manually operable means for first releasing pressure from said head space by operating said release valve means and then discharging carbonated water through said discharge means by opening said inlet and outlet pistons in unison.

4,251,474

ANNULAR GASKET FOR MOULDING LENSES FOR ORGANIC MATERIAL

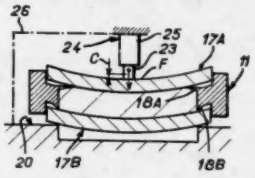
Denis Blandin, Villiers-sur-Marne, France, assignor to Essilor International, Cie Generald d'Optique, Creteil, France

Filed Feb. 21, 1980, Ser. No. 123,456

Claims priority, application France, Feb. 23, 1979, 79 04717

Int. Cl.³ B29D *11/00*

U.S. Cl. 264—1.1 **5 Claims**



1. An annular gasket for the moulding of ophthalmic or optical lenses, comprising two spaced transverse faces and an inner peripheral face, two axially spaced annular ridges on its inner peripheral face for cooperating tightly with two mould shells, at least one elastically deformable flange projecting from said inner peripheral face, one of said annular ridges being formed at the end of said annular flange, wherein said annular flange extends at an angle to the axis of the gasket, and said flange projects both from the inner peripheral face of the gasket and from a respective one of the transverse faces of the gasket.

4,251,475

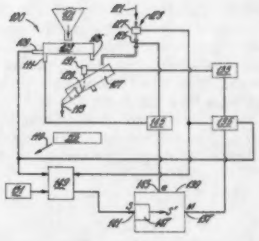
METHOD AND APPARATUS FOR CONTROLLING THE PROPORTION OF LIQUID AND DRY PARTICULATE MATTER ADDED TO A PELLETIZER

Eugene C. Varrasso, Heath, and Richard K. Henry, Newark, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 29, 1978, Ser. No. 974,456

Int. Cl.³ B01J *2/12*; B28B *17/00*; B29B *1/03*; C09C *1/28*

U.S. Cl. 264—40.1 **12 Claims**



1. A method of controlling the size of pellets produced by a pelletizer in which first and second ingredients are supplied thereto, said method comprising the steps of:

(a) sensing a characteristic indicative of the size of the pellets being produced by said pelletizer and generating a first signal responsive thereto;

(b) sensing the rate of supply of said first ingredient to said

pelletizer and generating a second signal responsive thereto;

(c) combining said first and second signals to form a third signal;

(d) comparing said third signal with a set point signal to generate a fourth signal; and

(e) using said fourth signal to modify the ratio of the rate of supply of said first ingredient to the rate of supply of said second ingredient.

4,251,476

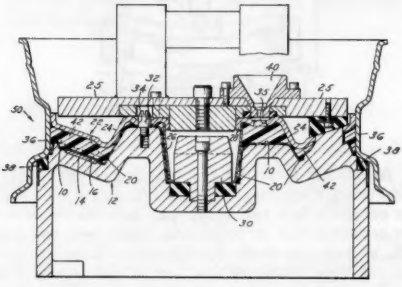
MANUFACTURE OF ORNAMENTAL VEHICLE WHEELS

Richard W. Smith, Lansing, Mich., assignor to Motor Wheel Corporation, Lansing, Mich.

Filed Mar. 16, 1979, Ser. No. 21,160

Int. Cl.³ B29D *27/04*

U.S. Cl. 264—46.7 **10 Claims**



1. A method of making an ornamental vehicle wheel which includes a metal disc wheel having a disc portion for mounting the wheel to a vehicle and a rim portion for carrying a vehicle tire, said method comprising the steps of (a) providing a mold having a mold surface contoured to provide a desired ornamental configuration and having a circumferential series of fixed trim placement areas on said mold surface, (b) placing ornamental trim pieces in said placement areas, (c) forming and at least partially curing in situ on said mold surface and over said trim pieces a skin of tough resilient elastomeric material, (d) placing a said metal disc wheel over said mold so as to define a cavity between said wheel and said mold surface, (e) molding and curing an elastomeric structure in said cavity to form an integral ornamental composite wheel assembly comprising said skin and said structure adhered to said wheel, and (f) removing said wheel from said mold with said elastomeric structure adhered thereto.

6. The method set forth in claim **1** or **2** wherein said step (c) comprises the steps of (c**1**) heating said mold face, (c**2**) forming said skin in situ on said heated mold face and (c**3**) only partially curing said skin in situ on said mold face; and wherein said step (e) comprises the steps of (e**1**) injecting a urethane reaction mixture including a blowing agent into said cavity and then (e**2**) simultaneously curing said urethane reaction mixture and said skin to cross-link said mixture and said skin to each other and thereby form said integral ornamental composite wheel assembly.

4,251,477

ON-LINE FLUID INJECTING METHOD

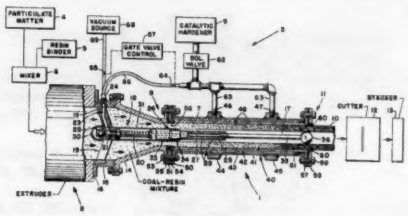
Miles W. Christian, Plymouth, Ohio, assignor to Plymouth Locomotive Works, Inc., Plymouth, Ohio

Division of Ser. No. 838,730, Sep. 29, 1977, Pat. No. 4,156,581. This application Feb. 1, 1979, Ser. No. 8,520

Int. Cl.³ B29C *25/00*; **B28B** *21/94*

U.S. Cl. 264—82 **14 Claims**

1. A method for continuously extruding material to produce a relatively strong extrusion, comprising continuously extruding an input material containing a binding agent, which requires delivery thereto of a further agent to complete the function of such binding agent to bind such input material, to



form a shaped extrusion, and continuously delivering such further agent to such shaped extrusion to cause relatively rapid hardening of such binding agent to complete such binding function.

4,251,478

POROUS NICKEL CATHODE

Cletus N. Welch, Clinton, and John O. Snodgrass, Akron, both of Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 6,068, Jan. 24, 1979. This application Sep. 24, 1979, Ser. No. 78,102

Int. Cl.³ C25B *1/34, 11/04, 11/06, 9/00*

U.S. Cl. 204—98 **19 Claims**

1. In a method of electrolyzing an alkali metal chloride brine comprising passing an electrical current from an anode to a cathode whereby to evolve Cl_2 at said anode, the improvement wherein said cathode comprises an electroconductive substrate, an imporous nickel coating on the substrate, and a porous surface comprising a major portion of nickel and a hydrogen overvoltage reducing amount of a transition metal chosen from the group consisting of cobalt, molybdenum, titanium, tantalum, tungsten, niobium, and zirconium.

4,251,479

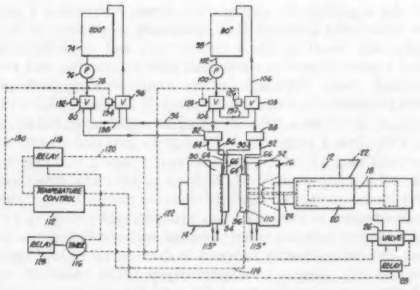
METHOD AND APPARATUS FOR INJECTION MOLDING DATA CARRYING ELEMENTS

Adam Pecht, Downey, and John F. Wegner, Los Angeles, both of Calif., assignors to Allied Record Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 933,427, Aug. 14, 1978, abandoned. This application Jun. 28, 1979, Ser. No. 52,922

Int. Cl.³ B29D *17/00*

U.S. Cl. 264—106 **14 Claims**



12. A method of forming data transcription bands comprising a multiplicity of grooves on a record element by injection molding a moldable plastic material selected from the group

consisting of styrene and acrylic resin at elevated temperature in a mold cavity at elevated temperature having the required groove pattern of the data transcription bands, comprising the steps of:

(a) heating the plastic material to a temperature at or above its melting point;

(b) uniformly heating the mold cavity to a temperature greater than approximately 140° F.;

(c) maintaining the temperature of said material at or above its melting point and injecting said heated plastic material into the heated mold cavity;

(d) uniformly heating the mold cavity to a temperature of between approximately 170° F. and approximately 325° F. to cause said plastic material to flow uniformly throughout the mold cavity;

(e) uniformly cooling the mold cavity to a temperature of below approximately 150° F. whereby the shape of the data transcription bands on the record element will precisely conform to the shape of the groove pattern of the mold, the width, depth and angle of the grooves of the groove pattern of the mold being precisely and faithfully replicated on the record element; and

(f) removing the recording element from the mold cavity.

4,251,480

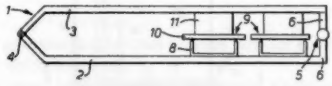
METHOD OF PRODUCING A DECORATED ARTICLE

John C. Crane, Links View, England, assignor to The Mettoy Company Limited, Northampton, England

Filed Dec. 28, 1978, Ser. No. 974,006

Int. Cl.³ B29D *3/00;* **B29F** *1/00*

U.S. Cl. 264—132 **3 Claims**



1. A method of producing a decorated hollow article using a mould comprising a base part having a side wall defining a mould cavity and a lid part co-operating with but being movable away from said base part and having a surface facing said base part, said surface being one of substantially planar or part-cylindrical, and said side wall having a cutting edge directed outwardly toward said lid part, wherein said method comprises the steps of locating in a fixed predetermined position on said lid part a carrier of plastic material having decorative ink thereon facing said surface of said lid part, disposing said carrier between said cutting edge and said lid part, charging said base part with plastic material to form a body of the hollow article, locating said lid part in a predetermined position on said base part so that said carrier extends beyond said co-operating wall of said base part, severing said carrier at least partially between said cutting edge and said lid part, rotationally moulding the article in the pressure of heat, and then removing that portion of said carrier which extends beyond said sidewall and which has been severed by said cutting edge whereby the decorated article produced has said carrier and ink thereon fused with each other and with the charging material.

4,251,481

CONTINUOUS SPIN-DRAW POLYESTER PROCESS

Maxwell C. Hamlyn, Cary, N.C., assignor to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed May 24, 1979, Ser. No. 42,188

Int. Cl.³ D01D *5/16*

U.S. Cl. 264—210.3 **12 Claims**

1. A process for the simultaneous spin-drawing of one or more ends of multifilament, continuous filament, synthetic polyester industrial fiber, comprising the steps of:

(a) supplying a melt of polyester polymer to a spinning unit;

(b) extruding the melt through a spinnerette having a plurality of extrusion orifices to form filaments;

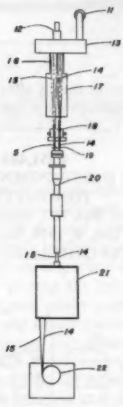
(c) advancing the extruded filaments through a substantially stationary column of air contained in a heated sleeve having a temperature of about 200° to 350° C.;

(d) advancing the filaments through a quenching zone;

(e) lubricating the filaments;

(f) passing the lubricated filaments over a forwarding roll system maintained at a temperature of less than 50° C.;

(g) subsequently passing the filaments through a steam impinging draw point localizing jet at a steam temperature of about 482° to 580° C. to heat the filaments substantially



immediately above their second order transition temperature;

(h) passing the filaments over a pair of draw rolls wherein at least one of the draw rolls is maintained at a temperature between about 190° and 237° C.;

(i) passing the filaments over a relax roll system maintained at a temperature of about 60° to 120° C., yarn tension to the relax roll system being maintained at about 0.4 to 2.0 grams per denier; and

(j) winding up the filaments at a tension of from about 0.06 to 0.6 gram per denier; whereby a reduced shrinkage, dimensionally stable industrial fiber is produced.

4,251,482

STERILIZED STORAGE CONTAINER

Roger S. Sanderson, 24772 Santa Clara, Dana Point, Calif. 92629, and Robert C. Whelchel, Newport Beach, Calif., assignors to Roger S. Sanderson, Dana Point, Calif.

Continuation-in-part of Ser. No. 734,228, Oct. 20, 1976, abandoned, which is a continuation of 923,359 Jul. 10, 1978, which is a continuation-in-part of Ser. No. 703,044, Jul. 6, 1976, which is a continuation-in-part of Ser. No. 640,824, Dec. 15, 1975, abandoned, which is a continuation of 827,992, Aug. 26, 1977, Now U.S. Pat. No. 4,149,650. This application Aug. 1, 1977, Ser. No. 821,042

The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.

Int. Cl.³ A61B *19/02;* **A61L** *2/06, 2/26;* **B65B** *55/06*

U.S. Cl. 422—26 **38 Claims**

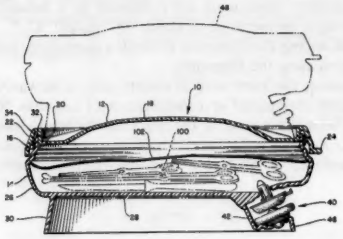
1. Apparatus comprising:

means forming a closed container;

a valve in a wall of said container; and

means for closing said valve responsive to a substantial drop in the gaseous pressure for an environment applied to said

container; said pressure responsive means including temperature responsive means for permitting operation of said



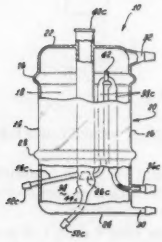
pressure responsive means after a predetermined temperature of said environment is reached.

4,251,483

MULTIPLE INDEPENDENT PATH BUBBLE TONOMETER

Cliff R. Carroll, P.O. Box 767, Glendale, Calif. 91209

Filed Oct. 9, 1979, Ser. No. 82,795
Int. Cl.³ G01N *33/50, 33/96, 1/10*
U.S. Cl. 422—68 **11 Claims**



1. In a bubble tonometer apparatus adapted for perparing a predetermined gas/blood sample, which comprises in a controlled environment locus a gas/blood equilibration chamber, means to add a blood sample to such chamber, means to diffuse a gas into said blood sample to an equilibrium condition therein, said gas diffusion means including a porous diffuser body communicating said sample with a pressurized gas supply, and side arm means to selectively withdraw an aliquot portion of the equilibrium condition sample, the improvement comprising an elongated circular cross-section diffuser body extending vertically within said chamber at least partly freely of the surrounding chamber wall to define a vertically extended annular space with said surrounding chamber wall for the diffusion of said gas radially into said blood sample for selective withdrawl of an aliquot portion thereof in highly oxygenated relation from said annular space immediately surrounding said diffuser body.

4,251,484

METHOD AND APPARATUS FOR CONVERTING ALCOHOLS TO HYDROCARBONS

Nicholas Daviduk, Pennington, and James H. Haddad, Princeton Junction, both of N.J., assignors to Mobil Oil Corporation, N.Y.

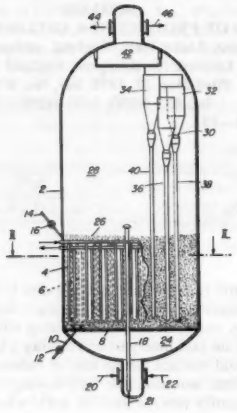
Filed Oct. 30, 1979, Ser. No. 89,705
Int. Cl.³ B01J *8/20, 8/24*
U.S. Cl. 422—145 **5 Claims**

1. An apparatus for converting lower alcohols to hydrocarbons including gasoline boiling range hydrocarbons which comprises, in combination, an elongated substantially vertical cylindrical reactor vessel, a horizontal grid means positioned across a bottom cross-sectional portion of the vessel above a bottom semicircular closure member of the vessel,

a plurality of vertical heat exchanger tubes positioned within a lower portion of the vessel with the bottom of the tubes spaced vertically above the grid means,

a plurality of vertical open end baffle tubes slotted in the wall thereof throughout substantially the entire length thereof positioned interspersed with and adjacent to said heat exchange tubes and spaced horizontally from one another and from said heat exchange tubes to maintain a reactant hydraulic diameter of less than 24 inches during contact with a fluid mass of catalyst particles, the bottoms of said baffle tubes spaced vertically above said grid means,

conduit means for withdrawing particles of catalyst from the space intermediate the grid means and the bottom of said tubes,



conduit means for adding particles to an upper portion of a bed of fluid catalyst in which said heat exchange means is immersed,

a plurality of cyclone separating means located in an upper portion of said vessel provided with dipleg means extending downward through said vessel and terminating in the space above said grid means,

a plenum chamber in the upper portion of said vessel in open communication with said cyclone separating means and conduit withdrawal means for reaction products connected to the upper portion of said plenum chamber,

an open end conduit means extending from a bottom portion of said vessel beneath said grid means to an upper level of said vessel above said heat exchange and baffle tubes and terminating above the upper interface of a fluid bed of catalyst in the lower portion of the vessel, means for introducing separately controlled gases to the bottom of said open end conduit means,

means for charging reactant to said vessel beneath said grid means for flow upwardly through said vessel.

4,251,485

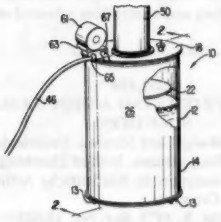
APPARATUS FOR CLEANSING NOXIOUS CONSTITUENTS FROM GAS STREAMS

John M. Schauer, Lockport, and Dennis J. Schauer, Joliet, both of Ill.

Continuation-in-part of Ser. No. 732,432, Oct. 14, 1976, abandoned, which is a continuation-in-part of Ser. No. 629,617, Nov. 5, 1975, abandoned. This application Mar. 28, 1978, Ser. No. 890,988

Int. Cl.[3] B01D *53/34*

U.S. Cl. 422—168 21 Claims



1. A gas process apparatus to scrub noxious gas from a gas stream which comprises:

(a) a closed upstanding container having a substantially flat bottom, a side wall, and a top cover;

(b) a gas washing liquid disposed in said container to a predetermined level;

(c) a baffle plate mounted substantially horizontally in said container above said predetermined liquid level and being spaced from said side wall of said container about at least substantially the entire periphery of said baffle plate to permit cleansed gas to escape, the space between said baffle plate and said gas washing liquid being substantially unobstructed, said baffle plate having a substantially flat surface facing said liquid and having a size and shape to retain liquid in the lower portion of said container as gas is driven therethrough and to act as an impact wall against which gas-containing bubbles impinge;

(d) at least one drive pipe having an inlet positioned outside of said container and extending into said container with an outlet positioned substantially vertically near the bottom of said container appreciably below said predetermined liquid level to direct a high velocity gas stream passing therethrough substantially vertically into the bottom of said container;

(e) pumping means for receiving and pumping a gas to be processed into the inlet of said drive pipe to form gas-containing bubbles in said gas washing liquid;

(f) an outlet stack having a diameter greater than the outlet diameter of said drive pipe, said outlet stack communicating with the interior of said container above said baffle plate, said outlet stack serving to discharge cleansed gas escaping around the periphery of said baffle plate from said container; and

(g) said baffle plate being spaced above said predetermined liquid level a distance sufficient to cause said gas-containing bubbles to recirculate through said liquid before passing outwardly around the periphery of said baffle plate.

4,251,486

METHOD AND APPARATUS FOR DECOMPOSING INJURIOUS SUBSTANCES

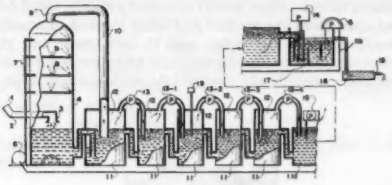
Senju Sohda, 2-61-10, Hagoromo-cho, Tachikawa-shi, Tokyo, Japan

Division of Ser. No. 916,556, Jun. 19, 1978. This application Dec. 22, 1978, Ser. No. 972,342

Claims priority, application Japan, Nov. 16, 1977, 52/137373; Dec. 30, 1977, 52/158950

Int. Cl.[3] B01D *47/02;* B01J *10/00;* B01D *50/00;* B01F *7/16*

U.S. Cl. 422—170 1 Claim



1. An apparatus for decomposing injurious gaseous substances to form a non-injurious substance comprising means defining a reaction gas liquid contact tower having a lower portion for holding a reservoir including an aqueous solution of sodium carbonate and an upper portion disposed above said reservoir, inlet means for passing the injurious gaseous substances to be treated into said upper portion, a plurality of spray nozzles for spraying said aqueous solution into said upper portion above said inlet means to contact the gaseous substances, a plurality of serially interconnected reaction vessels, each of said vessels having means for maintaining and holding a reservoir of said aqueous solution at a predetermined level, conduit means for maintaining a predetermined level of said aqueous solution in said tower and for passing said aqueous solution from said tower connecting said lower portion of said tower and one of said interconnected reaction vessels to establish fluid communication between the respective reservoirs thereof, gas discharge means connected to said upper portion of said tower and one of said reaction vessels for supplying at least part of said gaseous substances into the reservoir of said reaction vessel, said gas discharge means having a discharge output without said reservoir of said reaction vessel, pump means for passing gaseous substances from above the level of said reservoir of one of said reaction vessels to below the level of the reservoir of another of said reaction vessels, a mixing vessel connected to at least one of said reaction vessels for receiving said solution therefrom, means for supplying only one of a hydrogen donor or oxygen donor substance to said mixing vessel, mixer means in said mixing vessel for mixing said donor substance and said solution to form a mixture, mixture pump means for passing said mixture to said plurality of spray nozzles, means for separating water from said mixing vessel, and a water purifier means connected to said mixing vessel for purifying water.

4,251,487

DEVICE FOR HOLDING A GRANULAR CATALYST

Eitel Goedicke, Ahe, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 858,631, Dec. 8, 1977, abandoned. This application Apr. 11, 1979, Ser. No. 29,256

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1976, 2655750

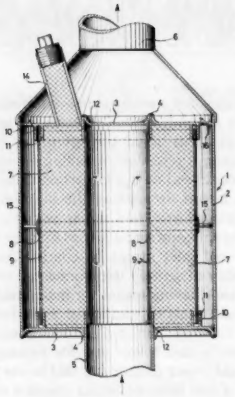
The portion of the term of this patent subsequent to Apr. 10, 1996, has been disclaimed.

Int. Cl.[3] B01J *8/02;* F01N *3/28*

U.S. Cl. 422—179 10 Claims

1. In a converter for catalytic conversion of exhaust gas from internal combustion engines comprising a housing closed by an

upper and a lower end plate, said upper end plate being provided near its periphery with a plurality of apertures for delivering purified gas to a gas outlet flanged to said housing's upper end, said lower end plate being centrally penetrated by a gas inlet being provided with an extension reaching into the interior of said housing; said housing being provided with an inner metal collar being secured substantially perpendicular to said upper end plate and within said extension of said gas inlet, respectively; an inner perforated tube being disposed slidably within the inner metal collar to accommodate axial relative movement between the inner perforated tube and the inner metal collar, said housing being further provided with an outer perforated tube, an outer metal collar and a middle metal collar spaced apart from one another and being secured substantially perpendicularly to said upper and to said lower end plate, respectively; the outer perforated tube being arranged slidably between the outer metal collar and the middle metal collar for



accommodating relative axial movement between the outer perforated tube and the outer and middle metal collars; said outer perforated tube being slidable on said housing's inside wall by means of at least one spacer being secured substantially perpendicular to the periphery of said outer perforated tube to accommodate relative axial movement between the spacer and the housing; said inner and said outer perforated tube being spaced apart with respect to one another forming an annular space therebetween, and said annular space being filled by catalyst granules forming a bed; said outer perforated tube and said inner perforated tube, respectively, being made up of perforated sheet metal having a wire mesh secured to its catalyst-facing side; the improvement according to which said perforated sheet metal has a thickness of 0.7 to 2 mm, said wire mesh with meshes 0.5 to 2 mm wide being provided with openings equal to 10 to 90% of the width of the openings of said perforated sheet metal, and being produced from wires having a diameter of 0.5 to 1.5 mm.

4,251,488

MEANS FOR HIGH PRESSURE PRODUCTION OF DIAMONDS

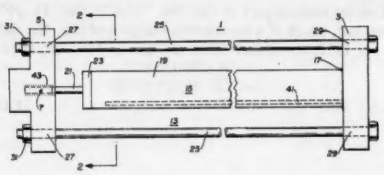
Antonio J. Estanislao, 622 - 22nd St., Oakland, Calif. 94612

Filed Nov. 16, 1978, Ser. No. 961,212

Int. Cl.³ B01J *3/06*; C01B *31/06*

U.S. Cl. 422—242 **8 Claims**

1. Apparatus for creating diamonds comprising means for converting diamond producing material into diamonds upon exposure of such material in the presence of heat, said pressure producing means including an end plate, an anvil with a recess for receiving such diamond producing material, means stabilizing the distance between said end plate and said anvil, an unenclosed expandable assembly having one end fixed with respect to said end plate with the other end extendable into said anvil recess to a position short of the end of said recess, said expandable assembly including a member expandable in response to a rise in temperature, means for applying heat directly and only to said expandable member for raising such



temperature of said expandable member for bringing about such expansion without undue heating of said entire apparatus and means for providing and controlling a heated environment for such material.

4,251,489

PROCESS FOR PRODUCING A COPPER SULFATE SOLUTION

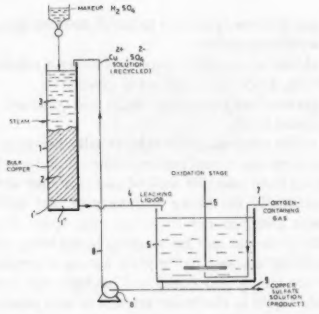
Elmar Kniprath, Hamburg; Gerd Mrusek, Buxtehude; Hermann Priebe, and Claus Reppenhagen, both of Hamburg, all of Fed. Rep. of Germany, assignors to Nordeutsche Affinerie, Hamburg, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 18,635

Claims priority, application Fed. Rep. of Germany, Mar. 9, 1978, 2810226

Int. Cl.³ C01G *3/10*

U.S. Cl. 423—41 **8 Claims**



1. A process for producing a copper sulfate solution which comprises the steps of:

(a) leaching a mass of metallic copper with a solution whose solute consists essentially of Cu^{2+} and SO_4^{2-} ions without the introduction of an oxidizing gas to produce a leaching liquid;

(b) spatially and temporally removed from step (a) oxidizing the leaching liquid produced in step (a) with an oxygen-containing gas, thereby producing a copper sulfate solution; and

(c) recycling a portion of the oxidized liquid from step (b) to the leaching of step (a) as at least part of the leaching liquid thereof.

8. A process for producing a copper sulfate solution which comprises the steps of:

(a) leaching a mass of metallic copper with a liquor containing Cu^{2+} and SO_4^{2-} ions to produce a leaching liquid;

(b) spatially and temporally removed from step (a) oxidizing the leaching liquid produced in step (a) with an oxygen-containing gas, thereby producing a copper sulfate solution; and

(c) recycling at least a portion of the oxidized liquid from

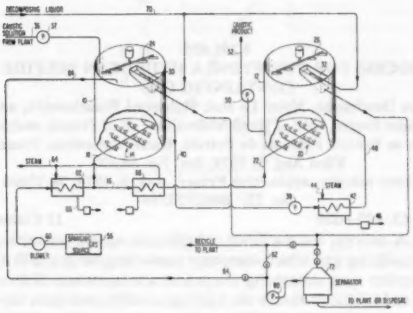
step (b) to the leaching of step (a) as at least part of the leaching liquor thereof at such a rate that the time of contact with the metallic copper is less than 60 seconds in step (a).

4,251,490

CONTROLLED TEMPERATURE PURIFICATION OF AQUEOUS SODIUM HYDROXIDE SOLUTION

Rodney A. Cerny, Parma Heights, and Robert P. Dolesh, Westlake, both of Ohio, assignors to The H. K. Ferguson Company, Cleveland, Ohio

Filed Jun. 13, 1979, Ser. No. 48,061
Int. Cl.³ C01D *1/04*
U.S. Cl. 423—179 **10 Claims**



1. Process for multi-stage separation of solid suspended impurities from an aqueous solution of sodium hydroxide comprising the steps of

providing an aqueous solution of sodium hydroxide, said solution having impurities above a desired level including suspended solids,

providing sequential gas-flotation treatments for separation of suspended solids by bubble formation of a sparging gas in contact with said solution, including

controlling the temperature of said sequential treatments such that the temperature of an initial treatment is at a lower treatment than that of a subsequent treatment, the temperature of said initial treatment being in the range of from about 70° F. to about 90° F., and the temperature of said subsequent treatment being in the range of from about 90° F. to about 100° F., and

recovering the treated aqueous solution of sodium hydroxide having a desired purity level.

4,251,491

PROCESS FOR MAKING SODIUM TRIPOLYPHOSPHATE FROM WET PROCESS PHOSPHORIC ACID

Stanley A. Ficner, Durham; Andrew J. Klanica, Cheshire, and Theodore F. Korenowski, Branford, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 9, 1979, Ser. No. 28,148
Int. Cl.³ C01B *25/30*
U.S. Cl. 423—185 **12 Claims**

1. A process for producing sodium tripolyphosphate from wet process phosphoric acid comprising the steps of:

(a) reacting said phosphoric acid with a sodium compound and forming a reaction mixture comprising an aqueous solution of Na_2HPO_4 and NaH_2PO_4 having a pH above 6 with silicon and magnesium impurities contained therein;

(b) adding a fluoride compound to said reaction mixture; the amount of said fluoride compound added being sufficient so that the resulting molar ratio of F:(Si+Mg) in said reaction mixture is at least about 5:1;

(c) precipitating a major portion of said magnesium in said reaction mixture;

(d) separating said precipitated magnesium from said reaction mixture, thereby forming a clarified aqueous solution;

(e) heating said clarified aqueous solution at temperatures in the range of about 400° C. to about 700° C. for sufficient time in order to,

(i) volatilize and remove a major portion of the combined sum of fluoride and silicon in said clarified solution from said clarified solution; and

(ii) form a solid sodium tripolyphosphate product; and

(f) recovering said solid sodium tripolyphosphate product.

4,251,492

PURIFICATION PROCESS

Alan Marshall, Macclesfield, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

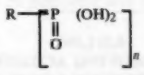
Filed Jul. 12, 1979, Ser. No. 57,153
Claims priority, application United Kingdom, Jun. 7, 1978, 26466/78
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 **23 Claims**

1. A process for the removal of hydrogen suphide from gases or liquid hydrocarbons, comprising contacting the gas or liquid hydrocarbons with an aqueous alkaline solution which comprises:

(a) an anthraquinone disulphonic acid or a sulphonamide thereof

(b) a compound of a metal which can exist in at least two valency states and,

(c) a sequestering agent comprising a compound of formula I:



I

wherein

R is an aliphatic residue containing from 1 to 12 carbon atoms and which is optionally substituted or interrupted by one or more hydroxy, or carboxyl groups, a carbonyl group a phenyl group, or an aralkyl group containing 7 to 10 carbon atoms; and

n is an integer from 1 to 4; as well as the water-soluble salts and esters of compounds of formula I.

4,251,493

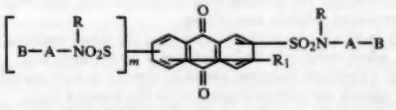
GAS PURIFICATION PROCESS

Donald R. Randell, Stockport, and Emyr Phillips, Sale, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jul. 12, 1979, Ser. No. 57,154
Claims priority, application United Kingdom, Jul. 21, 1978, 30844/78
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—226 **6 Claims**

1. A process for the absorption and subsequent removal as sulphur of hydrogen sulphide from gases, gas mixtures or liquid hydrocarbons which comprises

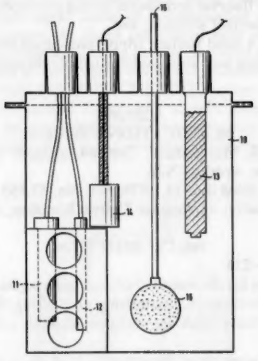
washing the gas, gas mixture or liquid hydrocarbon containing hydrogen sulphide with an aqueous alkaline solution of (a) one or more anthraquinone sulphonamides of formula I



I

wherein

A is a C_1–C_4 straight or branched chain alkylene radical
B is a $—SO_3M$, $—CO_2M$, $—PO_3HM$ or $—PO_3M_2$ grouping where
M is hydrogen or a cation giving a water-soluble derivative,
R is hydrogen, a cation giving a water-soluble derivative or C_1–C_4 straight or branched chain alkyl,
R_1 is hydrogen, methyl or —COOH, and m is 0 or 1, and



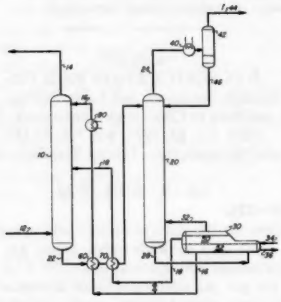
(b) one or more compounds of a metal having at least two valency states,
whereby the hydrogen sulphide is oxidised and sulphur is liberated, and the reduced anthraquinone sulphonamide is oxidised by contact with free oxygen or a gas containing it.

4,251,494

PROCESS FOR REMOVING ACIDIC COMPOUNDS FROM GASEOUS MIXTURES USING A TWO LIQUID PHASE SCRUBBING SOLUTION

Geoffrey R. Say, Baton Rouge, La., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Dec. 21, 1979, Ser. No. 106,097
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—228 **11 Claims**



1. A process for at least partially removing carbon dioxide from a gaseous feed including carbon dioxide comprising:
(a) contacting the gaseous feed in a contacting zone with a scrubbing solution comprising:
(i) an alkaline material selected from the class consisting of alkali metal salts and alkali metal hydroxides; and
(ii) a sterically hindered amine to thereby at least partially absorb the carbon dioxide from the gaseous feed;
(b) passing the scrubbing solution containing the absorbed carbon dioxide from the contacting zone into a regeneration zone wherein the scrubbing solution is at least partially desorbed;
(c) separating the at least partially desorbed scrubbing solution into an upper liquid phase having a relatively high alkali bicarbonate to alkali carbonate ratio and a lower liquid phase having a relatively low alkali bicarbonate to alkali carbonate ratio; and,
(d) directing at least a portion of the lower liquid phase into the contacting zone at a first location and at least a portion of the upper liquid phase into the contacting zone at a second location, the second location disposed below the first location in the contacting zone.

4,251,495

PROCESS FOR PURIFYING A HYDROGEN SULFIDE CONTAINING GAS

Andre Deschamps, Noisy Le Roi; Sigismond Franckowiak, and Andre Sugier, both of Rueil Malmaison, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Aug. 8, 1979, Ser. No. 64,679
Claims priority, application France, Aug. 8, 1978, 78 23666
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—230 **11 Claims**

1. A process for purifying a hydrogen sulfide containing non-oxidizing gas, which comprises contacting the gas with an absorption mass containing copper, at a temperature of from 250° to 550° C., to absorb the hydrogen sulfide and form copper sulfide; wherein the absorption mass is regenerated by interrupting the contact of the gas with the mass when the mass is at least partially saturated, contacting the mass with an oxidizing gas containing from 0.5 to 5% by volume of oxygen, at a temperature of from 250° to 345° C., to convert the copper sulfide substantially to copper sulfate, and then contacting the mass with a reducing gas containing from 5 to 20% by volume of hydrogen, at a temperature of from 300° to 450° C., to convert the copper sulfate substantially to sulfur dioxide and metallic copper, thereby regenerating the mass, which is then contacted again by the hydrogen sulfide containing gas.

4,251,496

PROCESS FOR THE REMOVAL OF SO_x AND NO_x FROM GASEOUS MIXTURE CONTAINING THE SAME

John M. Longo, New Providence, N.J., and Neville L. Cull, Baker, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 22, 1979, Ser. No. 22,924
Int. Cl.³ B01D *53/00*
U.S. Cl. 423—239 A **12 Claims**

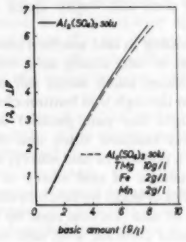
1. A process for removing at least a portion of sulfur dioxide and at least a portion of a nitrogen oxide from a gaseous mixture comprising the same and molecular oxygen, which comprises:
(a) contacting said gaseous mixture with cerium oxide at reaction conditions including a temperature ranging from about 500° C. to about 700° C. to produce cerium oxysulfate and a gaseous mixture having a decreased content of sulfur dioxide, and
(b) contacting the resulting gaseous mixture with at least a portion of said cerium oxysulfate resulting from step (a) in the presence of ammonia at a temperature ranging from about 500° C. to about 700° C., said step (a) and said step (b) being conducted at about the same temperature, at net oxidizing conditions, for a time sufficient to decrease the nitrogen oxide content of said gaseous mixture.

4,251,497

METHOD FOR MEASURING THE BASIC AMOUNT IN BASIC ALUMINUM SULFATE SOLUTION FOR REMOVAL OF SO_2 GAS

Kazumasa Tezuka; Seiichi Hisano; Hyoichi Sasaki, and Ikuo Watanabe, all of Okayama, Japan, assignors to Dowa Mining Co. Ltd., Tokyo and Dowa Engineering Co. Ltd., Okayama, both of, Japan

Continuation-in-part of Ser. No. 831,124, Sep. 7, 1977, abandoned. This application Apr. 6, 1979, Ser. No. 27,891
Claims priority, application Japan, Sep. 11, 1976, 51-108990
Int. Cl.[3] C01B *17/00;* **G01N** *25/48*
U.S. Cl. 423—242 **5 Claims**



1. A method for removing SO_2 from a waste gas comprising:
(1) contacting the waste gas with a basic aluminum sulfate solution which absorbs the SO_2 from the gas;
(2) subjecting the solution with the absorbed SO_2 gas therein to oxidation to convert any sulfite ion to sulfate;
(3) returning a major portion (P_1) of the oxidized solution to the absorbing step;
(4) neutralizing the remainder of the oxidized solution with calcium carbonate or calcium hydroxide to precipitate gypsum which is separated to produce solution (P_2);
(5) returning solution (P_2) to the absorbing step; and controlling the amounts of basic aluminum sulfate at desired levels in solutions P_1 and P_2 by
(a) obtaining samples of solutions P_1 and P_2
(b) measuring the temperatures T_1 and $T_{1'}$ of the sample solutions P_1 and P_2, respectively;
(c) adding sulfuric acid to each of sample solutions P_1 and P_2 in amounts at least equivalent, on a stoichiometric basis to the estimated basic amount in each solution and immediately measuring the respective temperatures T_2 and $T_{2'}$ of the mixtures;
(d) determining the basic amount for each respective solution from the temperature differences T_1 and T_2, and $T_{1'}$ and $T_{2'}$ from a predetermined calibration curve of the linear relationship of temperature difference and basic amount; and
(e) adjusting the basic amounts in solutions P_1 and P_2 to the desired levels based on said determination.

4,251,498

PREPARATION OF GRANULAR SODIUM TRIPOLYPHOSPHATE PRODUCTS FROM SCREEN UNDERSIZE SODIUM TRIPOLYPHOSPHATE PARTICLES

Paul L. Hensler; Delmar F. Church, both of Lawrence, Kans., and Robert W. Beger, Mount Zion, Ill., assignors to FMC Corporation, Philadelphia, Pa.

Filed Jan. 2, 1979, Ser. No. 609
Int. Cl.[3] C01B *15/16, 25/26*
U.S. Cl. 423—315 **31 Claims**

1. A process for producing a granular sodium tripolyphosphate product having low friability, high absorptivity, and a bulk density within the range of from about 0.65 g/cc to about 0.87 g/cc, which comprises compacting screen undersize sodium tripolyphosphate particles, milling the compacted particles, recovering a compacted and milled feed having a particle size distribution of at least 15% by weight +50 mesh, 0 to 50% by weight −50 +100 mesh and 0 to 50% by weight −100 mesh, moisturizing the compacted and milled feed by adding a sufficient amount of water thereon to produce a moisturized material containing on the average between 15 and 35% by weight moisture, agitating the material being moisturized, calcining the moisturized material to a temperature within the range of from about 300° to about 600° C. and recovering said granular sodium tripolyphosphate product.

4,251,499

PROCESS FOR THE PREPARATION OF FERRIERITE

Johannes M. Nanne; Martin F. M. Post, and Willem H. J. Stork, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 3, 1979, Ser. No. 99,270
Claims priority, application Netherlands, Dec. 14, 1978, 782162
Int. Cl.[3] C01B *33/28*
U.S. Cl. 423—329 **5 Claims**

1. A process for the preparation of ferrierite which comprises maintaining an aqueous mixture at a temperature of 100°–200° C. which contains one or more compounds of an alkali metal (M), one or more aluminum compounds, one or more silicon compounds and at least one compound (NR) selected from piperidine and alkyl-substituted piperidines wherein in the mixture the various compounds are present in the following molar ratio, expressed in moles of the oxides, with the exception of piperidine and alkyl-substituted piperidines:

$SiO_2:Al_2O_3 > 15$;

$H_2O:SiO_2 = 5–500$;

$NR:SiO_2 = 0.05–1.0$, and $M_2O:Al_2O_3 > 1$;

until the ferrierite has formed, and separating the ferrierite crystals from the mother liquor.

4,251,500

PROCESS FOR HYDROCRACKING A WASTE RUBBER

Minoru Morita, Yonezawa, and Tetsuya Takamatsu, Kokubunji, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Oct. 18, 1978, Ser. No. 952,514
Claims priority, application Japan, Oct. 20, 1977, 52/125088
Int. Cl.[3] C01B *31/02;* **C09C** *1/48;* **C01B** *31/00*
U.S. Cl. 423—449 **3 Claims**

1. A process for hydrocracking a waste rubber characterized by adding 0.1 to 5% by weight of a powdery catalyst, based on the weight of said rubber, obtained by mixing (1) a main catalyst of iron compound selected from the group consisting of iron hydroxide, iron oxide, bog iron and red mud with (2) an auxiliary catalyst of compounds of the Periodic Table, Group VI metals selected from the group consisting of the di-and tri-valent oxides and acids of Cr, Mo, W, Se and Te, the ratio of said main catalyst and said auxiliary catalyst of said powdery catalyst being 1:01 to 1:0.75 based on the molar ratio of the metal components thereof, to crushed waste rubber, heating the resultant mixture at a temperature of 350° to 500° C. under a hydrogen partial pressure of 100 to 300 atm. so that said crushed waste rubber is hydrocracked based on a synergistic catalyst action with the sulfur contained in said waste rubber, and recovering carbon and an oil inclusive of aromatic and naphthenic hydrocarbons.

4,251,501
PROCESS OF PREPARING HIGH PURITY CRYOLITE FROM FLUORIDE SOLUTION CONTAINING DISSOLVED SILICA

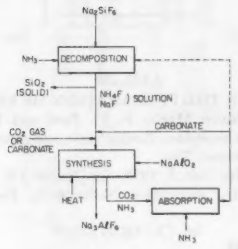
Yoshiyuki Kobayashi, and Tamio Nakamura, both of Ube, Japan, assignors to Central Glass Company, Limited, Japan

Filed Aug. 7, 1979, Ser. No. 64,363

Claims priority, application Japan, Aug. 8, 1978, 53-95804; Jun. 29, 1979, 54-81509

Int. Cl.[3] C01F *7/50*

U.S. Cl. 423—465 16 Claims



1. In a process of preparing cryolite by mixing an aqueous solution of sodium aluminate with an aqueous fluoride solution which contains silica dissolved therein as impurity and maintaining a resultant reaction solution at temperatures not lower than 60° C. to allow precipitation of cryolite from the reaction solution,

the improvement comprising said reaction solution being made to contain carbonate ions in a concentration in the range from 1 to 20 g/l as CO_2.

4,251,502
MODULAR CHLORINE DIOXIDE GENERATION SYSTEMS

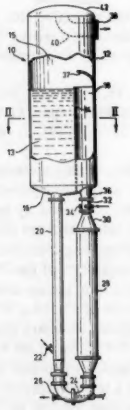
James H. Forster, Mississauga, Canada, assignor to ERCO Industries Limited, Islington, Canada

Filed Jun. 5, 1979, Ser. No. 45,850

Claims priority, application United Kingdom, Jun. 28, 1978, 28105/78

Int. Cl.[3] C01B *11/02*

U.S. Cl. 423—478 14 Claims



1. A continuous method for the production of chlorine dioxide, which comprises:

continuously maintaining a chlorine dioxide-producing reaction medium in an enclosed substantially cylindrical reaction zone having a lower closure and a vapor space located above the liquid level of said reaction medium in said reaction zone, the reaction medium containing an alkali metal chlorate, a reducing agent capable of reducing said alkali metal chlorate to chlorine dioxide and chlorine, and a strong mineral acid,

continuously generating chlorine dioxide and chlorine from said reaction medium and continuously evaporating water from said reaction medium at substantially the boiling point thereof while the reaction zone is maintained under a subatmospheric pressure,

continuously removing from said reaction zone a gaseous mixture of said generated chlorine dioxide and chlorine and evaporated water through a gaseous outlet located in communication with said vapor space in said reaction zone,

continuously depositing in said reaction zone an alkali metal salt of the anion of said strong acid, removing a slurry containing deposited alkali metal salt and part of said reaction medium through said bottom closure and along a downward straight line path parallel to the axis of or coaxial with said reaction zone, and recovering alkali metal salt from a portion of said slurry, and

recycling the remainder of said slurry in admixture with make-up quantities of alkali metal chlorate, reducing agent and strong acid to said reaction zone by the steps of:

admixing alkali metal chlorate with said remainder of said slurry,

heating recycled material substantially to an elevated temperature which is the boiling point of the reaction medium at the prevailing absolute pressure in said reaction zone,

accelerating the heated material in admixture with alkali metal chlorate, and also reducing agent when said strong mineral acid is not also the reducing agent, to establish a back pressure exceeding the difference in saturation vapor pressure of the heated mixture and of said reaction medium,

adding strong mineral acid to said accelerated heated mixture substantially at the maximum velocity of said mixture resulting from said acceleration to provide a feed material for said reaction zone,

allowing gaseous material in said feed material to expand while maintaining a low rate of acceleration,

feeding said expanded feed mixture along a flow path within and to one side of said reaction zone, said flow path extending from the lower end thereof out of direct fluid flow communication with said reaction medium parallel to the axis of the reaction zone in a lower region thereof and curved in an upper region thereof to a location above the level of liquid in said reaction zone, and

discharging said expanded feed mixture into said vapor space generally tangentially to said reaction zone.

9. A continuous method for the production of chlorine dioxide, which comprises:

continously maintaining a chlorine dioxide-producing reaction medium in an enclosed substantially cylindrical reaction zone having a lower closure and a vapor space located above the liquid level of said reaction medium in said reaction zone, the reaction medium containing an alkali metal chlorate, a reducing agent capable of reducting said alkali metal chlorate to chlorine dioxide and chlorine, and a strong mineral acid,

continuously generating chlorine dioxide and chlorine from said reaction medium and continuously evaporating water from said reaction medium at substantially the boiling point thereof while the reaction zone is maintained under a subatmospheric pressure,

continuously removing from said reaction zone a gaseous mixture of said generated chlorine dioxide and chlorine and evaporated water through a gaseous outlet located in communication with said vapor space in said reaction zone,

continuously depositing in said reaction zone an alkali metal salt of the anion of said strong acid, removing a slurry

containing deposited alkali metal salt and part of said reaction medium through said bottom closure and along a downward straight line path parallel to the axis of or coaxial with said reaction zone, and recovering alkali metal salt from a portion of said slurry, and

recycling the remainder of said slurry in admixture with make-up quantities of alkali metal chlorate, reducing agent and strong acid to said reaction zone by the steps of:

admixing alkali metal chlorate with said remainder of said slurry,

heating recycled material substantially to an elevated temperature which is the boiling point of the reaction medium at the prevailing absolute pressure in said reaction zone,

accelerating the heated material in admixture with alkali metal chlorate, and also reducing agent when said strong mineral acid is not also the reducing agent, to establish a back pressure exceeding the difference in saturation vapor pressure of the heated mixture and of said reaction medium,

adding strong mineral acid to said accelerated heated mixture substantially at the maximum velocity of said mixture resulting from said acceleration to provide a feed material for said reaction zone,

allowing gaseous material in said feed material to expand while maintaining a low rate of acceleration,

feeding said expanded feed mixture along a flow path within and to one side of said reaction zone, said flow path extending from the lower end thereof out of direct fluid flow communication with said reaction medium parallel to the axis of the reaction zone to a location above the level of liquid in said reaction zone, said flow path being defined in part by the internal wall of the reaction zone,

discharging said expanded feed mixture into said vapor space from said outlet, and

deflecting said discharged expanded feed mixture generally radially of the reaction zone.

4,251,503
EFFICIENCY CONTROL SYSTEM FOR CHLORINE DIOXIDE PLANTS

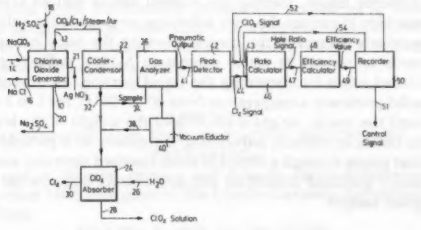
Richard Swindells, Caledon, and Gerald Cowley, Mississauga, both of Canada, assignors to ERCO Industries Limited, Islington, Canada

Filed Sep. 13, 1979, Ser. No. 75,098

Claims priority, application United Kingdom, Sep. 19, 1978, 37336/78

Int. Cl.³ C01B *11/02*; G01N *31/00*

U.S. Cl. 423—478 **12 Claims**



1. In a continuous process for the production of chlorine dioxide by reducing chlorate ions with chloride ions in the substantial absence of any reducing agent for chlorine and in an aqueous acid reaction medium to form a product gas stream containing chlorine dioxide and chlorine, the improvement which comprises controlling the efficiency of chlorine dioxide production by varying at least one efficiency-modifying operating parameter of the process in response to continuous determinations of chlorine dioxide production efficiency by repetitive operations of:

(a) machine generating separate signals corresponding to the concentration of chlorine dioxide and chlorine respectively in the product gas stream;

(b) machine converting the generated separate signals into a signal corresponding to the mole ratio of chlorine dioxide to chlorine in the product gas stream;

(c) machine converting the mole ratio signal into a signal corresponding to the efficiency of the process by machine computation from the equation:

$$\text{Efficiency} = \frac{6R}{2 + 5R} \times 100\%$$

where R is the mole ratio; and

(d) machine recording the efficiency signal.

10. Apparatus for the production of chlorine dioxide by a chlorine dioxide producing process wherein chlorate ions are reduced with chloride ions in the substantial absence of any reducing agent for chlorine and in an acid aqueous reaction medium to form a product gas stream containing chlorine dioxide and chlorine whereby the efficiency of chlorine dioxide production is controlled by varying at least one efficiency-modifying parameter of the process in response to continuous determinations of chlorine dioxide efficiency, comprising:

(a) chlorine dioxide generator means containing said acid aqueous reaction medium and having outlet means for removal of said product gas stream from said generator means;

(b) product gas analysis and signal generator means for sampling the removal product gas stream and generating separate signals indicative of the concentrations of chlorine dioxide and chlorine respectively in the sample;

(c) converter means for converting the separate concentration signals to a signal indicative of the mole ratio of chlorine dioxide to chlorine in the sample;

(d) efficiency calculating means for producing a signal corresponding to the efficiency of conversion of chlorate ions to chlorine dioxide in the process from the mole ratio signal by computation from the equation:

$$\text{Efficiency} = \frac{6R}{2 + 5R} \times 100\%$$

wherein R is the mole ratio;

(e) recording means for recording the efficiency value, said recorder means including comparator means for comparing the recorded efficiency with previously-recorded values thereof and for generating a control signal in response to predetermined variations in recorded efficiency values; and

(f) means for utilizing said control signal to effect said variation of at least one efficiency-modifying parameter of the chlorine dioxide producing process effected in said chlorine dioxide generator means.

4,251,504
PROCESS FOR PRODUCING ACICULAR GOETHITE

Toshihiro Hamabata, and Shinji Umeki, both of Tokyo, Japan, assignors to TDK Electronics, Co. Ltd., Tokyo, Japan

Filed Sep. 20, 1979, Ser. No. 77,266

Int. Cl.³ C01G *49/02*

U.S. Cl. 423—632 **6 Claims**

1. A process for producing an acicular goethite comprising:

adjusting the pH of an aqueous solution of a ferrous salt to a value higher than 11;

allowing a precipitate of ferrous hydroxide to form;

adjusting the ratio of the anion of the ferrous salt to the ferrous hydroxide to 0.1 to 0.5 by separating a portion of the supernatant from said precipitate; and

oxidizing the precipitate by bubbling an oxygen-containing gas through the remaining supernatant and precipitate at a temperature lower than 80° C.

4,251,505
PROCESS FOR CARRYING OUT GAS/LIQUID REACTIONS

Rudolf Steiner, Sulzbach, and Peter Herbrechtsmeier, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 26, 1979, Ser. No. 60,962

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1978, 2833190

Int. Cl.[3] **B01J** *10/00;* **B01D** *53/34*

U.S. Cl. 423—659 **5 Claims**

1. A process for carrying out gas/liquid reactions in a downstream reactor to improve the volume of gas utilized in the reactor, comprising

injecting a gas having a bubble diameter of from 0.1 to 10 mm into a liquid flowing in a downward direction at an empty tube speed of 0.14 to 0.5 m/s, the proportion of said liquid to said gas being greater than 8:1 and the residence time of the gas being at least 6 seconds per meter of reactor length.

4,251,506
CONTROLLED-RELEASE COMPOSITIONS FOR ADMINISTRATION OF THERAPEUTIC AGENTS TO RUMINANTS

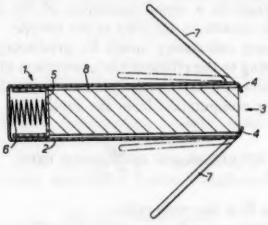
Ralph H. Laby, Canterbury, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Australia

Filed May 9, 1978, Ser. No. 904,202

Claims priority, application Australia, May 25, 1977, PD0230

Int. Cl.[2] **A61K** *9/22, 9/26*

U.S. Cl. 424—19 **9 Claims**



1. In a controlled release composition for administering active agents to ruminants, comprising an effective amount of an active agent, up to about 50% by weight based on the total weight of the composition, in a matrix of a biologically acceptable water insoluble wax and a biologically acceptable surfactant; the improvement in said matrix comprising at least two surfactants having an HLB value of 8.5 or less, the HLB values of said surfactants differing by not more than 2 units thereby avoiding differential dissolution and non-uniform active agent release rate arising from the component with the higher HLB value diffusing faster than the component with the lower HLB value, said composition comprising the improved matrix having a melting point in excess of 39° C. and, when inserted as a solid into the rumen of a ruminant, having the property of controlled slow disintegration at the interface between said composition and ruminal fluid in the rumen of said ruminant.

4,251,507
PROCESS AND COMPOSITION FOR REDUCING DENTAL PLAQUE

B. Newell Olson, Norwich, N.Y., assignor to Dominion Pharmacal, Inc., Norwich, N.Y.

Continuation-in-part of Ser. No. 858,298, Dec. 7, 1977, abandoned. This application Oct. 2, 1979, Ser. No. 81,045

Int. Cl.[3] **A61K** *7/16, 7/18, 31/79, 47/00*

U.S. Cl. 424—49 **3 Claims**

1. In the process of cleansing human teeth within the oral cavity for the purpose of effecting improved means for digital removal of plaque therefrom, the essential steps of (1) extruding directly to the surface of said teeth a thin bead of viscous cleansing composition in which said bead is extruded at the interface of tooth and gum from the orifice of a compressible member by digital pressure applied thereto wherein said extrusion is made circumferentially to the buccal and labial surface of all teeth within the oral cavity wherein said member being of sufficient length to reach the region of the third molar within the oral cavity while said member is positioned at the labial exterior of the mouth, said composition containing therein as essential ingredient thereof a cellulosic derivative selected from the group consisting of methyl cellulose, hydroxy propyl methyl cellulose and hydroxy butyl methyl cellulose wherein said composition spreads over the surface of said teeth within a time period of from about 10 seconds to about 30 seconds without washing away of said composition from the surface of said teeth by salivary juices, and (2) brushing of said teeth with a standard toothbrush having no organic composition thereon using forward, backward, downward and circumferential strokes over said teeth with said toothbrush to effect improved removal of plaque therefrom.

4,251,508
PROCESS FOR EXTRACTING VALUABLE NUTRIENTS FROM THE LEAVES OF THE WATER LILY OR WATER HYACINTH PLANT

Godofredo G. Monsod, Jr., 11 Scout Bayoran Street, Quezon City, Philippines

Continuation-in-part of Ser. No. 702,612, Jul. 6, 1976, abandoned. This application Aug. 21, 1978, Ser. No. 935,664

Claims priority, application Philippines, Mar. 25, 1976, 9876

Int. Cl.[3] **A61K** *35/78;* **A61L** *13/00*

U.S. Cl. 424—76 **3 Claims**

1. A process for extracting from the leaves of the water hyacinth plant *Eichhornia crassipes* a product comprising vitamin A, vitamin B_1, vitamin B_2, niacin, protein and chlorophyll which comprises growing in lake or river water, which water contains oxygen in the amount of 57 kg/ha/day; the total nitrogen is 9.8 kg/ha/day; the total phosphorus is 2.4 kg/ha/day, harvesting the leaves after five to seven months growth, cutting the leaves from the stems of the said plant, collecting and withering the leaves for from 48 to 72 hours at room temperature to a water content of 30–15%, crushing the thus withered leaves, feeding the crushed leaves into an expeller machine to extract the juicy substance containing the valuable nutrients present in the leaves, allowing the juicy extract to settle to reduce its water content to 5–10%, collecting the settled solids by discarding the liquid portion, air drying the solid portion at a temperature from 30° to 50° C. for 1 to 3 days until the loss in weight is 60–75% of the weight of the leaves, to obtain an extract, pulverizing the extract to a particle size that passes through a 80 to 120 mesh standard sieve and storing under sterilized conditions and said extract contains per 100 gram sample

Vitamin A calculated as carotene	31.641 mg.
Vitamin B_1	0.32 mg.
Vitamin B_2	1.14 mg.
Niacin	4.7 mg.
Protein	23.2 g.
Chlorophyll	4.8 g.
Crude Fiber	2.30 g.
Crude Fats	3.20 g.
Moisture	7.60 g.
Ash	21.50 g.
Nitrogen-free Extract	balance.

4,251,509
DRY PARTICULATE VACCINE FOR ORAL ADMINISTRATION

Robert P. Hanson, Madison, Wis., and Adedipe Abegunde, Usi-Ekiti, Nigeria, assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Continuation of Ser. No. 943,209, Sep. 18, 1978, abandoned. This application Jan. 31, 1980, Ser. No. 117,253

Int. Cl.³ A61K *39/17*

U.S. Cl. 424—89 **14 Claims**

1. An oral vaccine for poultry and animals in the field comprising as the essential ingredients, protein as a binder, sugar as a solubilizing agent and an antigen in an amount to provide a titre of at least 1×10^5 units per particulate, in which the antigen is characterized as a vaccine having the ability to induce immunity to virulent strains of the homologeous virus, inocuity characterized by the inability to produce clinical disease in a recipient taking 10 times the recommended dosage, high thermostability characterized by infectious titre after 30 days at a temperature of 37° C., which infects by gastrointestinal route, and stimulates good response by seriological tests, said particulate having a moisture content of less than 1% by weight, and as non-essential ingredients an antioxidant up to 0.03% by weight to stabilize the vaccine, an immunostimulant up to 0.7% by weight to enhance response to the vaccine and a facilitator up to 3% by weight to enhance entry of the vaccine.

4,251,510
INTRAVENOUSLY INJECTABLE SOLUTION OF PLASMA PROTEIN FRACTION FREE FROM BRADYKININ, KININOGEN AND PREKALLIKREIN ACTIVATORS AND PROCESSES FOR ITS PRODUCTION

Donald L. Tankersley, Rockville, Md., assignor to Cutter Laboratories, Inc., Berkeley, Calif.

Continuation-in-part of Ser. No. 928,943, Jul. 28, 1978, which is a continuation-in-part of Ser. No. 800,503, May 25, 1977, abandoned. This application Aug. 15, 1979, Ser. No. 66,757

Int. Cl.³ A61K *35/14, 37/00;* **C07G** *7/00*

U.S. Cl. 424—101 **3 Claims**

1. A sterile aqueous solution of heat-stable Plasma Protein Fraction (Human) suitable for injection, wherein about 5 grams of Plasma Protein Fraction (Human) per 100 milliliters of sterile aqueous solution contains no greater than about 16 milli-units per milliliter Factor XIIa and fragments thereof capable of activating prekallikrein, no greater than about 10 nanograms bradykinin equivalents per milliliter of kininogen, and less than about 10 nanograms per milliliter of bradykinin, said Plasma Protein Fraction (Human) being a mixture of constituent plasma protein isolated from human plasma by a modified Cohn fractionation process and containing at least 83% albumin and no more than 17% alpha and beta globulins having molecular weights similar to that of albumin and no more than 1% gamma globulin.

4,251,511
ANTIBIOTIC AND FERMENTATION PROCESS OF PREPARING

Howard A. Whaley, Portage, and John H. Coats, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Oct. 2, 1979, Ser. No. 81,104

Int. Cl.³ A61K *35/00;* **C12P** *1/06*

U.S. Cl. 424—122 **6 Claims**

1. Antibiotic U-59,761, which is active against various microorganisms, and which in its essentially pure form has the following characteristics:

(a) molecular weight of 422.2269 (mass spectrometry);

(b) elemental analysis: C, 65.63; H, 7.97;

(c) optical rotation: $[\alpha]_D^{25}=121°$ (c, +.7575 MeOH);

(d) is soluble in methanol and ethanol; less soluble in methyl chloride and methylene chloride; and relatively insoluble in petroleum ether and cyclohexane;

(e) a melting point of 201°-206° C.;

(f) a characteristic infrared absorption spectrum when dissolved in a mineral oil mull as shown in FIG. 1 of the drawing; and

(g) a characteristic 13C-NMR as shown in FIG. 2 of the drawing.

4,251,512
SYNERGISTIC FUNGICIDAL COMPOSITIONS CONTAINING 1,2,4-TRIAZOLE DERIVATIVES

Wilhelm Brandes, Cologne; Paul-Ernst Frohberger; Hans Scheinpflug, both of Leverkusen, and Wolfgang Krämer, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

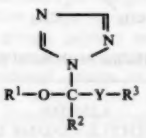
Filed Nov. 15, 1976, Ser. No. 742,039

Claims priority, application Fed. Rep. of Germany, Nov. 26, 1975, 2552967

Int. Cl.³ A01N *59/02, 43/48, 43/64, 43/72*

U.S. Cl. 424—164 **15 Claims**

1. A fungicidal composition containing as active ingredients (A) a 1,2,4-triazole derivative of the formula



in which

R^1 is phenyl, or phenyl substituted by halogen, nitro, trifluoromethyl, alkyl with up to 6 carbon atoms, alkoxy with up to 4 carbon atoms or phenyl.

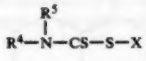
R^2 is hydrogen, alkyl with up to 4 carbon atoms or phenyl,

R^3 is alkyl with up to 6 carbon atoms, cycloalkyl with 5 or 6 carbon atoms, phenyl or 4-chlorophenyl, and,

Y is CO, $C(OH)_2$ or CH(OH).

and (B) 0.2 to 200 times the weight of (A) of a compound selected from the group consisting of

(a) dithiocarbamates of the formula



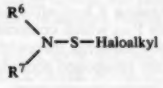
in which

R^4 is alkyl with 1 to 4 carbon atoms which is optionally substituted by an —NH—CS—S— group, by an amino, C_1–C_4 alkylamino or di-(C_1–C_4-alkyl) amino,

R^5 is hydrogen, methyl or ethyl, and

X is hydrogen, one equivalent of a metal atom or the radical $(CH_3)_2N$—CS—S,

(b) polyhalogenoalkylthio derivatives of the formula

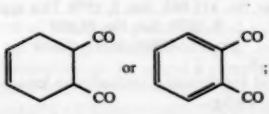


in which

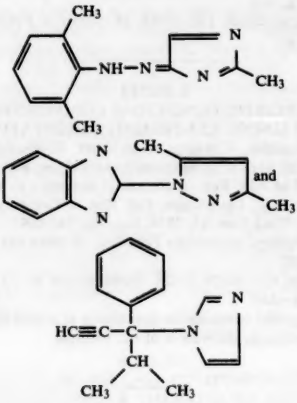
R^6 is amidosulphonyl or dmethylamidosulphonyl,

R^7 is phenyl, methylphenyl or halogenophenyl, or

R^6 and R^7 conjointly represent the radical



(c) imidazole and benzimidazole derivatives selected from the group consisting of



(d) sulphur or an alkaline earth metal polysulphide.

4,251,513

9-DESACETYL-9-ETHYLEN OXIDE DAUNORUBICIN, PROCESS FOR ITS MANUFACTURE AND USE THEREFOR

Sergio Penco; Francesco Angelucci, and Federico Arcamone, all of Milan, Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

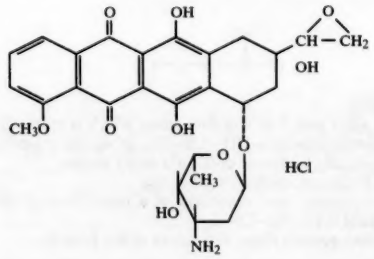
Filed Feb. 14, 1978, Ser. No. 877,754

Claims priority, application United Kingdom, Feb. 22, 1977, 7331/77

Int. Cl.[2] A61K *31/70;* **C07H** *15/24*

U.S. Cl. 424—180 **5 Claims**

1. The compound having the formula:



(I).

5. A method of treating a host afflicted with transplanted lymphocytic leukemia P_{388} which comprises intraperitoneally administering to a host afflicted therewith, a therapeutically effective amount of the compound according to claim 1.

4,251,514

INSOLUBILIZED DEOXYRIBONUCLEIC ACID (DNA)

Delfin F. Rippe, Miami, Fla., assignor to American Hospital Supply Corporation, Evanston, Ill.

Division of Ser. No. 911,865, Jun. 2, 1978. This application Nov. 5, 1979, Ser. No. 91,619

Int. Cl.[3] G01N *33/52, 33/68*

U.S. Cl. 424—8 **1 Claim**

1. A method for detecting antibodies to immunoglobulin G in serum comprising:

A. incubating an insoluble conjugate of methylated bovine serum albumin and immunoglobulin G with a serum from a patent for a sufficient period of time, thereby forming a serum flocculate;

B. washing said serum flocculate mixture and separating therefrom the supernatent fluid;

C. adding a fluorescein labeled anti-immunoglobulin antibody to the washed flocculate and incubating the labeled mixture for a sufficient period of time;

D. washing said incubated flocculate and separating therefrom the supernatant fluid; and

E. suspending the flocculate in a washing medium and determining the fluorescence thereof, which is proportional to the concentration of antibodies to said immunoglobulin G.

4,251,515

NOVEL NITROSOUREA DERIVATIVES

Tetsuo Suami, 5-8, Nakamachi 3-chome, Musashino-shi, Tokyo, Japan

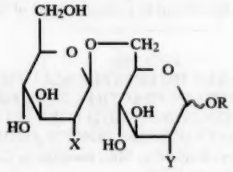
Filed Apr. 16, 1979, Ser. No. 30,510

Claims priority, application Japan, Apr. 15, 1978, 53-43800

Int. Cl.[3] A61K *31/70;* **C07H** *17/08*

U.S. Cl. 424—180 **7 Claims**

1. Notrosourea derivarives of the formula:



(I)

wherein when X=OH, Y=NHCONNOCH$_2$CH$_2$Cl and when Y=OH, X=NHCONNOCH$_2$CH$_2$Cl; R represents a hydrogen lower alkyl, phenyl or substituted phenyl; and ~ represents a single bond which may be in the α- or β-stereochemical configuration.

6. A pharmaceutical composition effective against transplanted leukemia or tumors, comprising a safe and effective amount of a compound according to claim 1 in combination with a pharmaceutically acceptable carrier.

7. A method for inhibiting the growth of transplanted leukemia or tumors, which comprises administering a safe an effective amount of a compound according to claim 1 to an animal afflicted therewith.

4,251,516

2-DEOXY-3-O-DEMETHYLFORTIMICINS

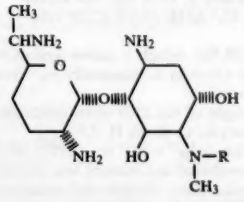
Jerry R. Martin; John S. Tadanier, both of Waukegan, and Paulette Johnson, Zion, all of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Sep. 26, 1979, Ser. No. 79,132

Int. Cl.[3] A61K *31/71;* **C07H** *15/22*

U.S. Cl. 424—180 **19 Claims**

1. A 2-deoxy-3-O-demethylfortimicin A and B and 2-deoxy-3-O-demethyl-4-N-fortimicin B derivatives represented by the formula:



I

wherein R is selected from the group consisting of hydrogen, acyl, aminoacyl, diaminoacyl, N-mono loweralkylaminoalkyl, N,N-diloweralkylaminoalkyl, hydroxy-substituted aminoacyl, loweralkyl, aminoloweralkyl, N-monoloweralkylaminolower-alkyl, N,N-diloweralkylaminoloweralkyl and hydroxy-substituted aminoloweralkyl and the pharmaceutically acceptable salts thereof.

14. A pharmaceutical antibiotic composition comprising a therapeutically effective amount of a compound of claim **1** and a pharmaceutically acceptable carrier or diluent.

4,251,517

UNSATURATED OR SUBSTITUTED METHYL ETHERS HAVING ANTIBIOTIC ACTIVITY

Peter Traxler, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

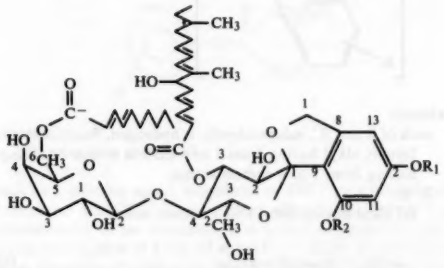
Continuation of Ser. No. 830,503, Sep. 6, 1977, abandoned. This application Jun. 27, 1979, Ser. No. 52,362

Claims priority, application Luxembourg, Sep. 9, 1976, 75760

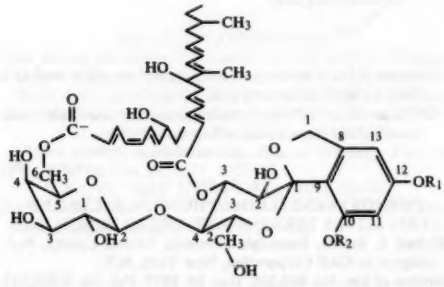
Int. Cl.[3] **A61K** *31/71*; **C07H** *13/12*

U.S. Cl. 424—180 **13 Claims**

1. A member selected from the group consisting of mono- and diethers of Papulacandin A of the formula



and mono- and diethers of Papulacandin B of the formula



wherein each of R_1 and R_2 represents hydrogen or an unsubstituted or substituted hydrocarbon radical of the formula

(IV) $-CH_2-K$ having not more than 24 C atoms

wherein K represents a member selected from the group consisting of

(1) an unsubstituted unsaturated aliphatic hydrocarbon radical having 1–7 C atoms,

(2) a member selected from the group consisting of phenyl, cycloalkyl of 3–8 ring C atoms, cycloalkenyl of 3–8 ring C atoms, cycloalkadienyl of 3–8 ring C atoms, and derivatives of these 4 groups substituted by alkyl groups having 1–4 C atoms

or

(3) a monocyclic heterocyclic radical selected from the group consisting of a 6-membered mono-aza-cyclic radical, a 5-membered mono-thia-cyclic radical and a 5-membered mono-oxa-cyclic radical, and derivatives of any of these heterocyclic radicals substituted at the ring by alkyl groups having 1–4 C atoms

or

(4) a saturated or unsaturated aliphatic hydrocarbon radical of 1–7 C atoms substituted by a member selected from the group consisting of phenyl, cycloalkyl of 3–8 ring C atoms, cycloalkenyl of 3–8 ring C atoms, cycloalkadienyl of 3–8 ring C atoms, a 6-membered mono-aza-cyclic radical, a 5-membered mono-thia-cyclic radical and a 5-membered mono-oxa-cyclic radical, and a derivative of any of these cyclic groups substituted at the ring by alkyl groups having 1–4 C atoms, or a saturated or unsaturated aliphatic hydrocarbon radical of 1–7 C atoms interrupted in the —C—C-chain by a divalent radical corresponding to any of the cyclic substituents mentioned, or

K represents any radical as defined under items (1) to (4) which are furthermore substituted by one or more functional groups selected from the group consisting of free, etherified and esterified hydroxyl groups, mercapto, alkylthio and phenylthio groups, halogen atoms, cyano, azido, oxo and nitro groups, primary and secondary amino groups and corresponding acylamino groups, sulphamino groups, free carboxyl groups or esterified carboxyl groups, carbamoyl, ureidocarbonyl, guanidinocarbonyl or groups derived therefrom by substitution of the hydrogens of the NH_2 group by lower alkyl, hydroxyalkyl or alkoxyalkyl groups, and sulpho groups, the acyl groups of esterified hydroxyl groups being derived from a carboxylic or sulphonic acid having not more than 18 C-atoms, and the ether groups or esterified carboxylic acid groups being derived from lower aliphatic alcohols, benzyl alcohol or benzhydrol or nitro or amino derivatives thereof, 2-tetrahydrofuranol or 2-tetrahydropyranol, tri-loweralkylsilyl alcohol and phenyl-di-lower alkylsilyl-alcohol, with the proviso that at least one of the symbols R_1 and R_2 represents the hydrocarbon of the formula (IV),

and therapeutically useful metal salts of the acidic ethers as defined and therapeutically useful acid addition salts or quaternary ammonium salts of the basic ethers as defined.

13. A pharmaceutical preparation which contains a compound as claimed in claim **1** together with a suitable pharmaceutical carrier.

4,251,518

METHOD OF PREPARING READILY DISINTEGRABLE PHARMACEUTICAL COMPOSITIONS

Wayne R. Moore, Webster Groves, and Debra K. Mann, Arnold, both of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jul. 3, 1979, Ser. No. 54,498

Int. Cl.[3] **A61K** *31/70, 47/00*

U.S. Cl. 424—180 **16 Claims**

1. A method of preparing readily disintegrable pharmaceutical composition which comprises mixing a disintegratingly effective amount of soy polysaccharides with a therapeutically active substance and shaping said mixture into the desired form.

9. A method of causing a pharmaceutical composition to disintegrate upon being administered to an animal, which comprises administering to the animal a pharmaceutical composition prepared from a mixture containing a therapeutically active substance and a disintegratingly effective amount of soy polysaccharides.

4,251,519
PROCESS FOR THE PREVENTION AND REDUCTION OF ELEVATED BLOOD CHOLESTEROL AND TRIGLYCERIDES LEVELS

Ernest A. Robbins, High Ridge, and Robert D. Seeley, Crestwood, both of Mo., assignors to Anheuser-Busch, Incorporated, St. Louis, Mo.

Continuation of Ser. No. 872,205, Jan. 25, 1978, abandoned, which is a continuation of Ser. No. 693,320, Jun. 7, 1976, abandoned. This application Jul. 30, 1979, Ser. No. 61,888

Int. Cl.[3] **A61K** *31/70, 35/78*

U.S. Cl. 424—180 **4 Claims**

1. A process of decreasing the concentration of blood cholesterol and triglycerides in mammals in need thereof comprising the oral administration to mammals in need thereof of yeast glycan resulting from comminuting yeast cell walls, said glycan having a major portion of yeast cell wall fragments and a minor portion of whole cells and containing on a dry solids basis 5–20% crude protein, 0.1–3% nucleic acid, 0.1–3% liquid, 0.5–3% ash and 60–95% carbohydrate, and having a viscosity of greater than 500 cp when suspended in a 10% aqueous solution.

4,251,520
GLUCOFURANOSE DERIVATIVES

Tiberio Bruzzese, Via Frua 21/6; Lorenzo Ferrari, Via Biella 8, and Aurelio F. Notarianni, Via dei Frassini 6, all of Milan, Italy

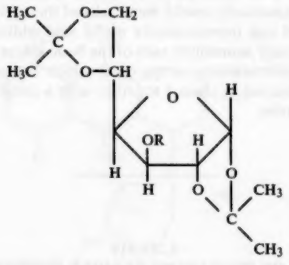
Continuation-in-part of Ser. No. 963,263, Nov. 24, 1978, abandoned, which is a continuation of Ser. No. 852,047, Nov. 16, 1977, abandoned. This application Sep. 26, 1979, Ser. No. 79,942

Claims priority, application United Kingdom, Nov. 16, 1976, 47662/76

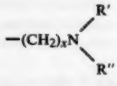
Int. Cl.[3] **A61K** *31/70;* **C07H** *15/04*

U.S. Cl. 424—180 **1 Claim**

1. a method of treating inflammatory and pyretic conditions in mammals, including humans, which comprises administering an anti-inflammatory or antipyretic amount of an active compound of the formula:



wherein R is a member selected from the group consisting of a straight-chained and branched alkyl radical contianing at least 5 carbon atoms, an alkenyl radical containing at least 4 carbon atoms, an alkynyl radical containing up to 6 carbon atoms, an acyloxy radical containing up to 6 carbon atoms, an alkoxy radical containing up to 6 carbon atoms, a carboxyalkyl radical containing up to 6 carbon atoms and a radical of the formula



in which x is a whole number of up to 5 and R′ and R″ are each a member selected from the group consisting of a hydrogen atom and an alkyl radical containing up to 6 carbon atoms, or in which R′ and R″, together with the nitrogen atom to which they are attached, form a heterocyclic ring which can contain an additional heteroatom; or an acid-addition salt thereof when the active compound is basic, to a mammal requiring treatment for an inflammatory or pyretic condition.

4,251,521
ALKYL DIARYL SULFONIUM SALTS

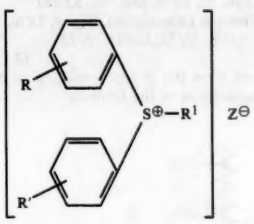
Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed Feb. 7, 1979, Ser. No. 10,014

Int. Cl.[3] **A61K** *31/69, 31/095*

U.S. Cl. 424—185 **11 Claims**

1. A method of reducing the level of glucose in the blood of a mammal in need of such treatment comprising orally administering to such mammal a blood glucose reducing effective amount of a compound of the formula:

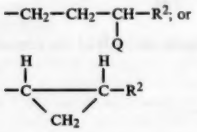


wherein

each of R and R′, independently, is hydrogen, fluoro, chloro, bromo, alkyl having from 1 to 4 carbon atoms, or alkoxy having from 1 to 4 carbon atoms;

R^1 is:

(a) alkyl having from 1 to 7 carbon atoms:



(b)

(c)

wherein R^2 is a hydrogen atom, methyl or ethyl; and Q is fluoro chloro or bromo; and

$Z^{\ominus}$ is an anion forming a pharmaceutically acceptable nontoxic salt of the corresponding cation.

4,251,522
PHENOXYBENZYLPHOSPHONIUM SALTS AND DERIVATIVES THEREOF AND USE AS FUNGICIDES

Michael J. Brown, Randolph Township, Morris County, N.J., assignor to GAF Corporation, New York, N.Y.

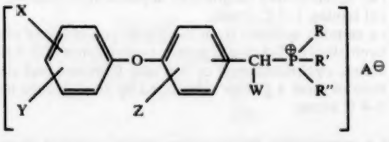
Division of Ser. No. 861,205, Dec. 16, 1977, Pat. No. 4,162,312. This application Jan. 31, 1979, Ser. No. 8,075

The portion of the term of this patent subsequent to Nov. 6, 1996, has been disclaimed.

Int. Cl.[3] **A01N** *57/22;* **C07F** *9/54*

U.S. Cl. 424—214 **14 Claims**

1. The compound having the formula:



wherein $A^{\ominus}$ is a halogen anion; X, Y and Z are each independently hydrogen, a halogen atom or haloalkyl group of from 1 to 4 carbon atoms; R, R' and R'' are each independently phenyl, halophenyl, haloalkylphenyl of from 7 to 12 carbon atoms or alkyl of from 1 to 6 carbon atoms, optionally substituted with halogen; and W is hydrogen, or —CHO.

9. The process of controlling fungus infection in plants which comprises treating said fungus infection with a fungicidally effective amount of at least one compound of claim 1.

4,251,523
SAFENED PHOSPHOROTHIOLATE PESTICIDAL COMPOSITIONS

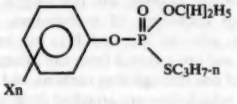
Harold E. Aller, Norristown, and Carl O. Hansen, Fort Washington, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation of Ser. No. 594,132, Jul. 7, 1975, abandoned. This application Feb. 15, 1979, Ser. No. 12,271

Int. Cl.[3] **A01N** *57/00, 29/04*

U.S. Cl. 424—225 **6 Claims**

1. A method of controlling insects in cotton which comprises applying to the growing cotton an insecticidal composition which comprises a phosphorothiolate of the formula



wherein

X is a halogen atom, and

n is 1, 2, or 3,

and, as a safening agent, toxaphene or DDT or a mixture of toxaphene and DDT in an amount effective to reduce the phytotoxicity of the composition to cotton wherein the composition is applied at a rate of about 0.5 to about 12 pounds of total phosphorothiolate plus safening agent per acre and the weight ratio of the phosphorothiolate to the safening agent is about 1:1 to about 1:5.

4,251,524
β-LACTAM ANTIBIOTICS

Peter Feyen, Mettmann; Michael Preiss, and Karl G. Metzger, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

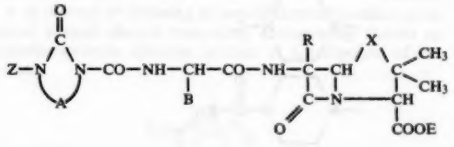
Division of Ser. No. 862,466, Dec. 20, 1977, Pat. No. 4,200,576. This application Jun. 29, 1979, Ser. No. 53,655

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1976, 2658718; Jun. 20, 1977, 2727586

Int. Cl.[3] **A61K** *31/655, 31/43;* **C07D** *499/68*

U.S. Cl. 424—226 **19 Claims**

1. A β-lactam compound of the formula



in which

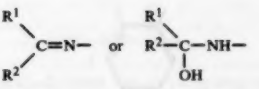
R is hydrogen or a group —UR',

in which

U is oxygen or sulphur and

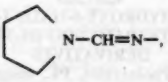
R' is alkenyl, alkinyl, aralkyl, aryl or cycloalkyl, or alkyl optionally substituted by halogen, amino, monoalkylamino, dialkylamino or alkoxy,

Z is a group of the formula

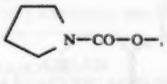


wherein

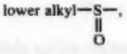
R^1 and R^2 and the same or different and each is hydrogen; optionally substituted alkyl, alkenyl, cycloalkyl, cycloalkenyl, cycloalkadienyl, aralkyl or aryl, the optional substituents being selected from the group consisting of amino, mono-lower alkylamino, di-lower alkylamino, pyrrolidyl, piperidyl, HCO—NH—, lower alkyl—CO—NH—, lower alkyl —CO—N—(lower alkyl)—, (lower alkyl)$_2$C=N—, lower alkyl—SO_2—NH—, lower alkyl —SO_2—N(lower alkyl)—HO—, SO_2—NH—, HO—SO_2—N(lower alkyl)—, amidino, (lower alkyl)$_2$ —N—CH=N—,



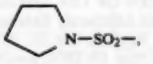
guanido, nitro, azido, hydroxyl, lower alkyl-oxy-, H—CO—O—, lower alkyl —CO—O—, lower alkyl —O—CO—O—, H_2N—CO—O—, lower alkyl—NH—CO—O, (lower alkyl)$_2$N—CO—O—,



H_2N—SO_2—O—, lower alkyl —NH—SO_2—O—, (lower alkyl)$_2$ N—SO_2—O—, HOOC—, H_2N—CO—, (lower alkyl)$_2$—N—CO—, OHC—, HO—SO_2—O—, HS—, lower alkyl—S—,



HO_3S—, lower alkyl—SO_2—, H_2N—SO_2—, lower alkyl —NH—SO_2—, (lower alkyl)$_2$N—SO_2—,



HO—SO_2—S—, alkyl having 1 to 6 carbon atoms, phenyl and phenoxy; heterocyclyl optionally substituted by lower alkyl, trifluoromethyl, halogen, amino, lower alkylamino, di-lower alkylamino, formylamino, acetylamino, CH_3—O—CO—NH—, C_2H_5O—CO—NH—, CH_3—SO_2—NH—, hydroxyl, methoxy, ethoxy, methylthio, ethylthio, CH_3—SO_2—, CH_3—SO—, HOOC—, HO_3S—, HCO—, lower alkyl—CO—, lower alkyl—O—CO—, or —CN; carboxyl, methoxycarbonyl, ethoxycarbonyl, cyano, nitro, lower alkylcarbonyl, —$CONH_2$, —$CONHCH_3$, —$CON(CH_3)_2$, —SO_2NH_2, —SO_2—$NHCH_3$ or —$SO_2N(CH_3)_2$, or R^1 and R^2, together with the carbon atom to which they are bonded, represent an optionally substituted 3-membered to 7-membered saturated or unsaturated carbocyclic or heterocyclic ring optionally substituted as was heterocyclyl;

A is —CH_2—CH_2—, —CH_2—CH_2—CH_2— or

B is phenyl, hydroxyphenyl, cyclohexenyl or cyclohexadienyl;
X represents S, O, SO, SO_2 or $—CH_2—$; and
E is hydrogen, a radical forming with the carboxyl group to which it is attached a carboxyl ester group, a cation of a pharmaceutically acceptable salt, or a protective group;
or a hydrate thereof.

15. An antibacterial and growth promoting composition containing as an active ingredient an antibacterial or growth promoting effective amount of a compound or pharmaceutically acceptable salt according to claim **1** in admixture with a diluent.

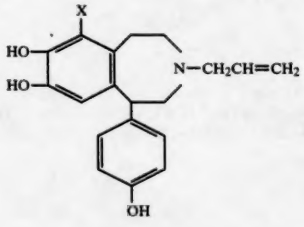
4,251,525

3-ALLYL-7,8-DIHYDROXY-6-HALO-1-(4-HYDROXYPHENYL)-2,3,4,5-TETRAHYDRO-1H-3-BENZAZEPINE DERIVATIVES

Joseph Weinstock, Phoenixville, Pa., assignor to SmithKline Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 742,965, Nov. 17, 1976, Pat. No. 4,180,765. This application May 25, 1979, Ser. No. 42,680
Int. Cl.[3] **A61K** *31/55;* **C07D** *223/16*
U.S. Cl. 424—244 **7 Claims**

1. A compound of the structural formula:



in which X is halo; together with a pharmaceutically acceptable acid addition salt or O-lower alkanoyl ester thereof.

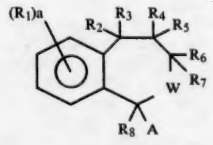
4,251,526

2-BENZOTHIEPINS AND COMPOSITIONS AND METHODS OF USE THEREFORE

John M. McCall, 3822 Edinburgh, Kalamazoo, Mich. 49007

Division of Ser. No. 847,350, Oct. 31, 1977, abandoned. This application May 15, 1979, Ser. No. 39,485
Int. Cl.[3] **C07D** *337/08*
U.S. Cl. 424—248.51 **6 Claims**

1. A compound having the formula



Ia

wherein

R_1 is the same or different and is selected from the group consisting of alkyl of one through three carbons, inclusive, alkoxy of one through three carbons, inclusive, trihaloalkyl of one or two carbons, hydroxy, halo, trihaloalkoxy of one or two carbons and o-methylenedioxy with the proviso that at least one R_1 is hydroxy, alkoxy or o-methylenedioxy;

a is one through three;

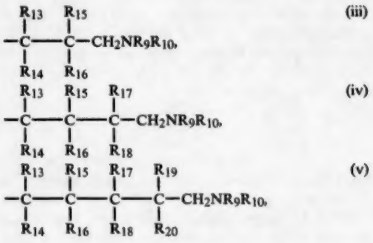
R_2 through R_7 are the same or different and are selected from the group consisting of hydrogen, alkyl of one through three carbons, inclusive, hydroxy, alkoxy of one through three carbons; phenyl; halo; cycloalkyl of three through six carbons when R_2 and R_3, R_4 and R_5, or R_6 and R_7 are taken together with the carbon to which they are attached; cycloalkyl of four through seven carbons when R_2 and R_4 or R_4 and R_6 are taken together with the carbons to which they are attached; and cycloalkyl of five or six carbons, with the overall provisos that no more than one ring may be attached to any one carbon and that at least two of R_2 through R_7 are hydrogen;

R_8 is alkyl of one through three carbons, hydrogen, or phenyl unsubstituted or substituted with a maximum of three substituents selected from the group consisting of alkyl of one through three carbons, halo, alkoxy of one through three carbons, and trihaloalkyl of one to two carbons; W is sulfur; and,

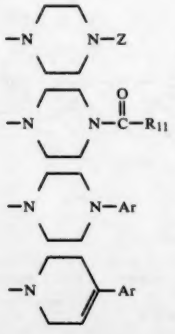
A is selected from the group consisting of:

(i) $—(CH_2)_nNR_9R_{10}$, wherein n is one to five;

(ii) $—(CH_2)_m\mathbf{13}\ (OCH_2CH_2)_q—NR_{21}R_{22}$, wherein m and q are each one to three, and $NR_{21}R_{22}$ is selected from the group consisting of morpholino, NR_9R_{10} and $NR'_{21}R'_{22}$ wherein R'_{21} and R'_{22} can be the same or different and are selected from the group consisting of H, alkyl of one through four carbons, and together with the N to which they are attached form a cyclic amine group containing one nitrogen atom and three to five carbon atoms in the ring,



wherein NR_9R_{10} is a heterocyclic amine selected from the group consisting of



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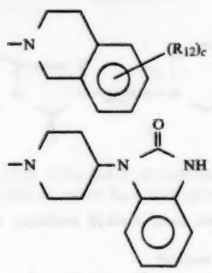


and

—NHCH$_2$CH$_2$Ar'

wherein R_{11} is alkyl of one through four carbons, 2-furyl, Ar, alkoxy of one to three carbon atoms, inclusive;

Z is selected from the group consisting of pyridyl, pyrimidinyl, triazinyl, pyrazinyl, pyridazinyl, pyrrolyl, imidazolyl, pyrazolyl, furyl, tetrazyl, oxazolyl, quinoxalinyl, and quinazolinyl, wherein each member of the group can be unsubstituted or substituted with one or two substituents selected from the group consisting of alkyl of one through three carbons, inclusive, alkoxy of one through three carbons; inclusive, hydroxy, halo, and haloalkyl of one through three carbons, inclusive;

R_{12} is alkyl or alkoxy of one through three carbons, hydroxy, halo, or trihalomethyl, R_{13} through R_{20} may be the same or different and are selected from the group hydrogen and alkyl of from 1 to 2 carbon atoms, inclusive; at least one of R_{13} through R_{20} when present being alkyl;

c is zero through two;

Ar and Ar' are phenyl unsubstituted or substituted with one through three substituents selected from the group consisting of alkyl or alkoxy of one through three carbons, hydroxy, halo, and trihaloalkyl or trihaloalkoxy of one or two carbons and pharmaceutically acceptable acid addition salts thereof.

4,251,527

PHARMACOLOGICALLY ACTIVE SUBSTITUTED 1,2,4-TRIAZINES

James M. Gullo, Perry; William P. Heilman, Chagrin Falls; Robert J. Wayner, Fairport Harbor, and Robert E. Moser, Mentor, all of Ohio, assignors to Diamond Shamrock Corporation, Dallas, Tex.

Division of Ser. No. 897,803, Apr. 19, 1978, Pat. No. 4,157,392, which is a continuation-in-part of Ser. No. 797,676, May 17, 1977, abandoned. This application Mar. 19, 1979, Ser. No. 21,506

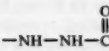
Int. Cl.^{3} A61K *31/53*

U.S. Cl. 424—249 **6 Claims**

1. A method of obtaining an anti-inflammatory effect in an animal in need thereof comprising administering thereto an antiinflammatorily effective amount of a compound of the formula

wherein

R_1 is C_1–C_4 hydroxy alkylamino, N-(C_1–C_2 alkyl)-N-(hydroxy C_1–C_4 alkyl) amino, C_1–C_{10} alkoxy, phenoxy, C_1–C_4 alkylphenoxy, C_1-C_4 alkoxy phenoxy, C_1-C_{10} alkylthio, C_3–C_6 cycloalkylthio, phenylalkylthio, hydrazino, C_1–C_4 alkyl hydrazino or the group



where R_4 is C_1–C_8 alkyl, halo (C_1–C_8) alkyl or R_4 represents the group

where R_5 is C_1–C_4 alkyl;

R_2 represents hydrogen, C_1–C_4 alkyl, C_3–C_6 cycloalkyl, phenyl, naphthyl, adamantyl, furyl, thienyl, halothienyl, benzofuryl, indolyl, pyridyl or phenyl substituted with at least one substituent selected from halo, C_1–C_6 alkyl, halo C_1–C_6 alkyl, C_1–C_6 alkoxy, acetamido, morpholino or nitro;

R_3 represents hydrogen, C_1–C_6 alkyl, phenyl, pyridyl or phenyl substituted with at least one substituent selected from C_1–C_4 alkyl, C_1–C_6 alkoxy, halo or acetamido;

provided that when R_2 is hydrogen then R_3 is also hydrogen; when R_1 is hydroxy alkylamino, N-(alkyl)-N-hydroxyalkyl) amino, or the group X-R_6 wherein X=0, or S, and R_6 is C_1–C_8 alkyl, C_7–C_8 aralkyl, C_3–C_8 cycloalkyl, C_4–C_8 cycloalkyl alkyl, R_2 and R_3 cannot simultaneously be halo-, alkyl-, or alkoxy-substituted phenyl; when R_1 is hydrazino, methylthio, methoxy or ethoxy, R_2 is other than phenyl and R_2 and R_3 cannot both be methyl; or when R_1 is hydrazino or C_1–C_4 alkylhydrazino, R_2 is other than C_1–C_4 alkyl;

and the pharmaceutically acceptable salts thereof.

4,251,528

PHTHALAZIN-4-YLACETIC ACID DERIVATIVES

David R. Brittain, and Robin Wood, both of Macclesfield, England, assignors to Imperial Chemical Industries Limited, London, England

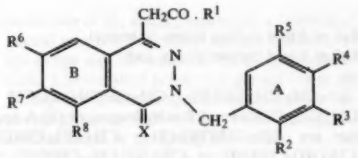
Filed Nov. 29, 1978, Ser. No. 964,725

Claims priority, application United Kingdom, Dec. 29, 1977, 54142/77

Int. Cl.^{3} C07D *237/30*

U.S. Cl. 424—250 **11 Claims**

1. A phthalazin-4-ylacetic acid derivative of the formula:



I

wherein R^1 is a hydroxy or benzyloxy radical, or a C_{1-4}-alkoxy radical optionally bearing an N-morpholino or di-C_{1-4}-alkylamino radical; the substituents R^2, R^3, R^4 and R^5 on benzene ring A are selected from any one of the following combinations:

(a) R^2 is a fluoro or methoxy radical, R^3 is hydrogen, R^4 is a chloro, bromo or iodo radical, and R^5 is hydrogen or a halogeno radical;

(b) R^2, R^3 and R^5 are hydrogen, and R^4 is a bromo or iodo radical;

(c) R^2 is hydrogen or a fluoro radical, R^3 and R^5 are the same or different halogeno radicals, and R^4 is hydrogen;

(d) R^2 is hydrogen or a fluoro radical, R^3 and R^4 are the same or different halogeno radicals, and R^5 is hydrogen; and

(e) R^2 is hydrogen, R^3 and R^5 are independently fluoro or chlororadicals, and R^4 is a chloro, bromo or iodo radical; and wherein, on benzene ring B, R^6, R^7 and R^8 are inde-

pendently selected from hydrogen, halogeno, C_{1-4}-alkyl and C_{1-4}-alkoxy radicals; or R^6 and R^7 together constitute a C_{1-4}-alkenedioxy diradical; provided that at least one of R^6, R^7 and R^8 is hydrogen; and X is oxygen or sulphur; or a pharmaceutically acceptable base-addition salt of a compound of formula I wherein R^1 is a hydroxy radical; or a pharmaceutically acceptable acid-addition salt of a compound of formula I wherein R^1 is a C_{1-4}-alkoxy radical bearing an N-morpholino or di-C_{1-4}-alkylamino radical.

9. A pharmaceutical composition suitable for use in inhibiting the enzyme aldose reductase which comprises a therapeutically effective amount of a compound of formula I, or a pharmaceutically acceptable salt thereof, as defined in claim 1, together with a pharmaceutically acceptable diluent or carrier.

4,251,529

ERGOT PEPTIDE ALKALOIDS

Gerard Maurer, Ruelisheim, and Jean-Rene Kiechel, Huningue, both of France, assignors to Sandoz Ltd., Basel, Switzerland

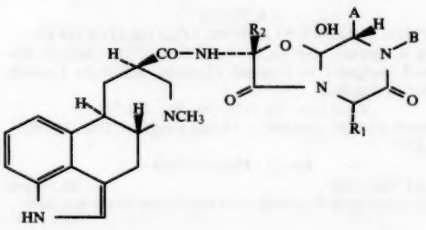
Continuation of Ser. No. 50,750, Jun. 21, 1979, abandoned, which is a continuation of Ser. No. 951,951, Oct. 16, 1978, abandoned, which is a continuation of Ser. No. 878,563, Feb. 16, 1978, abandoned. This application Feb. 8, 1980, Ser. No. 119,877

Claims priority, application Switzerland, Feb. 22, 1977, 2182/77

Int. Cl.³ A61K *31/495;* **C07D** *519/02*

U.S. Cl. 424—250 **31 Claims**

1. A compound of formula I



I

wherein

R_1 is alkyl of 1 to 4 carbon atoms or benzyl,

R_2 is alkyl of 1 to 4 carbon atoms, and

either

(i) A is $.CH_2.CH_2.COOH$; $.CH_2.CH(OH).COOH$ or $.CH(OH).CH_2.COOH$ and B is hydrogen, or (ii) A and B together are $.CH_2.CH(OH).CH_2.$; $.CH_2.CH_2.CH(OH)$; $.CH_2CH(OH).CH(OH).$ or $.CH(OH).CH_2.CH(OH).$ or a pharmaceutically acceptable acid addition salt thereof.

4,251,530

2-{[4-(6-SUBSTITUTED-2-PYRAZINYL)-1-PIPERAZINYL-]ALKYL}-5-SUBSTITUTED-1,2,4-TRIAZOLO[4,3-a]PYRIDIN-3(2H)-ONE ANALGESIC AGENTS

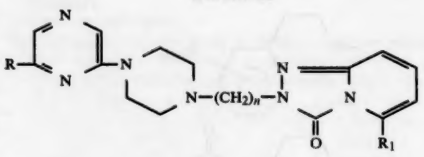
Walfred S. Saari, Lansdale, and William C. Lumma, Pennsburg, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Feb. 19, 1980, Ser. No. 122,337

Int. Cl.³ A61K *31/495;* **C07D** *401/14*

U.S. Cl. 424—250 **6 Claims**

1. A compound of the formula:



(I.)

wherein:

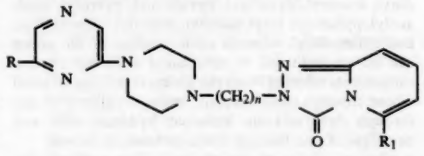
n is 2 to 4;

R is bromo, chloro, iodo; methyl; methoxy; or trifluoromethyl; and

R_1 is hydrogen or methyl;

and pharmaceutically acceptable salts thereof.

3. A method of treating pain in a patient in need of such treatment comprising the administration to such a patient of a therapeutically effective amount of a compound of the formula:



(I.)

wherein:

n is 2 to 4;

R is bromo, chloro, iodo; methyl; methoxy; or trifluoromethyl; and

R_1 is hydrogen or methyl;

and pharmaceutically acceptable salts thereof.

4,251,531

3,4-DIHYDRO-QUINAZOLINE DERIVATIVES

Gianfederico Doria, Milan; Ciriaco Romeo, Serino; Piernicola Giraldi, Milan; Francesco Lauria, Milan; Maria L. Corno, Milan; Piero Sberze, Varese, and Marcello Tibolla, Canale d'Agordo, all of Italy, assignors to Farmitalia Carlo Erba S.p.A., Milan, Italy

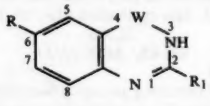
Filed Nov. 2, 1976, Ser. No. 738,221

Claims priority, application Italy, Dec. 5, 1975, 29998 A/75

Int. Cl.³ C07D *239/82;* **A61K** *31/505*

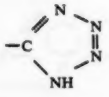
U.S. Cl. 424—251 **15 Claims**

1. Compound having the following formula (I)



wherein

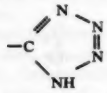
R is carboxy, the radical



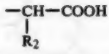
or $COOR_{11}$, wherein R_{11} is C_1–C_{12} alkyl, unsubstituted or substituted by (a) halogen, (b) carboxy, (c) C_2–C_6 carbalkoxy, (d) hydroxy, (e) C_1–C_6 alkoxy, (f) C_2–C_{18} aliphatic acyloxy, selected from the group consisting of acetoxy, propionyloxy, stearoyloxy, pivaloyloxy and oleoyloxy (g) phenyl unsubsti-

tuted or substituted by acetyl, hydroxy, C_1–C_6 alkyl, C_1–C_6 alkoxy, halogen (h)

wherein each of R_4 and R_5 is independently hydrogen or C_1–C_{10} alkyl or, when R_4 is hydrogen, R_5 may be (a') the radical

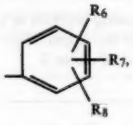


or (b') the group

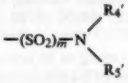


wherein R_2 is hydrogen or C_1–C_6 alkyl, or R_4 and R_5, taken together with the nitrogen atom, form a N-pyrrolidinyl, piperidino or morpholino radical;

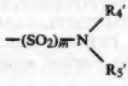
R_1 is the radical



wherein each of R_6, R_7 and R_8, which may be the same or different, is selected from the group consisting of (a')—$(O)_m$—R_9 wherein m is zero or 1 and R_9 is C_1–C_6 alkyl, which may be unsubstituted or substituted by hydroxy or C_1–C_4 alkoxy, (b') halogen, (c')



wherein each of R'_4 and R'_5, which may be the same or different, is hydrogen or C_1–C_4 alkyl, and m is defined above, and the



substituent is in the 2' position, and (d') hydrogen

W is >C=O or >C=S;

and the salts thereof, either with pharmaceutically acceptable bases or with pharmaceutically acceptable acids.

10. An antiallergic pharmaceutical composition comprising a compound of claim **1** and a pharmaceutically acceptable carrier and/or diluent therefor.

4,251,532

1-(4-AMINO-6,7-DIMETHOXY-2-QUINAZOLINYL)-4-(2-TETRAHYDROFUROYL)PIPERAZINE HYDROCHLORIDE DIHYDRATE

Robert Roteman, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 904,667, May 10, 1978, abandoned, which is a continuation of Ser. No. 821,675, Aug. 4, 1977, abandoned. This application Sep. 24, 1979, Ser. No. 78,317

Int. Cl.[3] **A61N** *31/505;* **C07D** *405/14*

U.S. Cl. 424—251 **3 Claims**

1. The compound 1-(4-amino-6,7-dimethoxy-2-quinazolinyl)-4-(2-tetrahydrofuroyl)piperazine hydrochloride dihydrate.

3. An antihypertensive pharmaceutical composition comprising a therapeutically effective amount of 1-(4-amino-6,7-dimethoxy-2-quinazolinyl-4-(2-tetrahydrofuroyl)piperazine hydrochloride dihydrate and a pharmaceutically acceptable carrier or diluent.

4,251,533

NITROGEN-CONTAINING HETEROCYCLIC COMPOUNDS

Kazuo Kubo, Urawa; Noriki Ito, Iwatsuki; Isao Souzu, Urawa; Yasuo Isomura, Yokohama; Hiroshige Homma, Omiya, and Masuo Murakami, Tokyo, all of Japan, assignors to Yamanouchi Pharmaceutical Co., Ltd., Tokyo, Japan

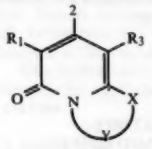
Division of Ser. No. 876,517, Feb. 9, 1978, Pat. No. 4,186,200, which is a continuation-in-part of Ser. No. 814,325, Jul. 11, 1977, abandoned. This application Aug. 20, 1979, Ser. No. 67,918

Claims priority, application Japan, Jul. 22, 1976, 51-87486; Dec. 29, 1976, 51-158228; Mar. 31, 1977, 52-36384; Apr. 13, 1977, 52-42423; May 1, 1977, 52-464

Int. Cl.[3] **A61K** *31/435;* **C07D** *471/02*

U.S. Cl. 424—256 **13 Claims**

1. A nitrogen-containing heterocyclic compound represented by the formula



wherein one of R_1 and R_2 represents a loweralkyl group, a phenyl group, a halophenyl group, or a lower alkoxyphenyl group and the other of them represents a hydrogen atom, a lower alkyl group or a phenyl lower alkyl group; R_3 represents a hydrogen atom, a lower alkyl group, a phenyl group, or a phenyl lower alkyl group; X represents a sulfur atom, or the group shown by

wherein m represents 1 or 2; and Y represents an ethylene group which may be substituted by a lower alkyl group, a trimethylene group, a tetramethylene group, a vinylene group which may be substituted by lower alkyl group, or the group shown by

wherein R_5 represents a hydrogen atom, a lower alkyl group, a trifluoromethyl group, or a phenyl group; said Y represents the aforesaid group other than an ethylene group, when one of said R_1 and R_2 is a lower alkyl group and the other of them is

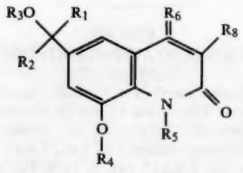
a hydrogen atom, and the pharmaceutically acceptable nontoxic salts thereof.

4,251,534
ANTIHYPERTENSIVE POLYFLUOROHYDROXYISOPROPYL BICYCLIC AND TRICYCLIC CARBOSTYRILS

Aldrich Paul E., Wilmington, Del., and Gilbert H. Berezin, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 22, 1977, Ser. No. 863,269
Int. Cl.[3] A61K *31/47;* **C07D** *215/22*
U.S. Cl. 424—258 **21 Claims**

1. A compound of the formula



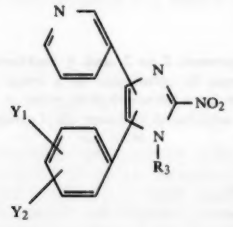
where
R_1=CF_3 or CF_2H;
R_2=CF_3, CF_2H or CF_2Cl;
R_3=hydrogen, alkanoyl, alkenoyl, hydrocarbyl aroyl, or alkyl of 1–6 carbon atoms,
R_4=methyl, ethyl, allyl or propyl;
R_5=hydrogen, methyl or ethyl;
R_6=methyl or ethyl;
R_8=hydrogen or methyl; or a pharmaceutically suitable salt thereof provided R_3=hydrogen.

4,251,535
ANTIINFLAMMATORY 4,5-DIARYL-2-NITROIMIDAZOLES

Saul C. Cherkofsky, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

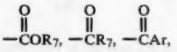
Division of Ser. No. 18,023, Mar. 6, 1979, Pat. No. 4,199,592, which is a continuation-in-part of Ser. No. 937,715, Aug. 25, 1978, abandoned. This application Oct. 12, 1979, Ser. No. 84,630
Int. Cl.[3] C07D *401/04;* **A61K** *31/44*
U.S. Cl. 424—263 **18 Claims**

1. A compound of the formula



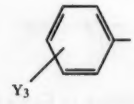
where
Y_1 is F, Cl, $N(CH_3)_2$ or C_1–C_4 alkoxy;
Y_2 is H, F, Cl;
R_3 is H,

2-tetrahydropyranyl, 2-tetrahydrofuranyl,



or $-SO_2Ar$;
R_5 is H or methyl;
R_6 is C_1–C_3 alkyl, benxyl, $-CH_2CH_2OCH_3$ or

R_7 is C_1–C_4 alkyl or benzyl; and
Ar is



where Y_3 is H, F, Cl, Br, C_1–C_4 alkyl, C_1–C_4 alkoxy or nitro; or
a pharmaceutically suitable acid addition salt thereof,
or a pharmaceutically suitable metal salt thereof where R_3 is H.

13. A method of treating arthritis in a mammal which comprises administering to the mammal an effective antiarthritic amount of a compound of claim **1**.

4,251,536
RODENTICIDES COMPRISING 6-AMINONICOTINAMIDE OR 6-AMINONICOTINOHYDROXAMIC ACID

Willard J. Johnson, 14 Foothills Dr., Nepean, Ontario, Canada (K2H 6K3)

Filed Oct. 22, 1979, Ser. No. 87,020
Claims priority, application Canada, Oct. 30, 1978, 314772
Int. Cl.[3] A01N *43/40, 25/00*
U.S. Cl. 424—266 **7 Claims**

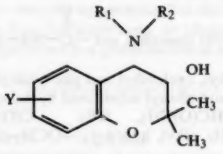
1. A rodenticide including as its active ingredient a rodenticidally effective amount of 6-aminonicotinamide or an acid salt thereof, and a rodent-edible dispersion medium therefor.

4,251,537
HYPOTENSIVE 3,4-DIHYDRO-2,2-DIMETHYL-4-AMINO-2H-BENZO[B]-PYRAN-3-OLS

John M. Evans, Roydon, England, assignor to Beecham Group Limited, England

Continuation of Ser. No. 776,976, Mar. 14, 1977, abandoned. This application Dec. 18, 1978, Ser. No. 970,199
Claims priority, application United Kingdom, Apr. 2, 1976, 13536/76; Aug. 10, 1976, 33178/76
Int. Cl.[3] A61K *31/445;* **C07D** *405/04*
U.S. Cl. 424—267 **31 Claims**

1. A compound selected from the group consisting of (a)a 3,4-dihydro-2H-benzo[b]pyran of the formula:



wherein R_1, when taken independently of R_2, is hydrogen or alkyl of up to 4 carbon atoms, unsubstituted or substituted with chloro, bromo, hydroxy, alkoxy of up to 4 carbon atoms or alkanoyloxy of up to 4 carbon atoms;

R_2, when taken independently of R_1, is hydrogen or alkyl of up to 4 carbon atoms;

R_1 and R_2 taken together, together with the nitrogen atom to which they are bound, are pyrrolidino, piperidino or hexamethyleneimino, unsubstituted or substituted with one or two methyl groups; and

Y is COR_3, $COOR_3$, SOR_3, SO_2R_3, $SOOR_3$, SO_2OR_3, $CH(OH)R_3$, $C(R_3)$=NOH, $C(R_3)$=NNH_2, $CONH_2$, $CONR_4R_5$, $SONR_4R_5$ or $SO_2NR_4R_5$ in which:

each of R_3 and R_4 is independently alkyl of up to 8 carbon atoms, unsubstituted or substituted with chloro, bromo, hydroxy, alkoxy of up to 4 carbon atoms or alkanoyloxy of up to 4 carbon atoms or substituted with three fluoro on the same carbon atom and

R_5 is hydrogen or alkyl of up to 4 carbon atoms,

(b) an O-alkanoyl derivative thereof, said alkanoyl having up to 6 carbon atoms and being unsubstituted or substituted with phenyl, and (c) a pharmaceutically acceptable acid addition salts thereof.

31. The method of treating hypotension in a human or animal which comprises administering thereto a hypotensively effective amount of a compound according to claim **1**.

4,251,538

INDOLEALKYLAMINES AND PROCESSES FOR THEIR PREPARATION

Hans-Heinrich Hausberg; Volker Koppe; Eike Poetsch; Otto Saiko, and Christoph Seyfried, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

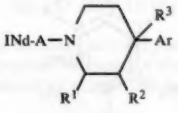
Filed Jun. 22, 1979, Ser. No. 51,320

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1978, 2827874; Mar. 16, 1979, 2910367

Int. Cl.[3] **A61K** *31/445;* **C07D** *209/08*

U.S. Cl. 424—267 **12 Claims**

1. An indolealkylamine of the formula



wherein Ind is 1-R^4-2-R^5-indol-3-yl or the corresponding group in which the benzene ring is monosubstituted to trisubstituted by alkyl, O-alkyl, S-alkyl, OH, F, Cl, Br, CF_3 or CN; A is $—(CH_2)_4—$, $—(CH_2)_3—CO—$ or $—CO—(CH_2)_2—CO—$; R^1 is H or methyl; R^2 is H or together with R^3 is a C—C bond; R^3 is H or together with R^2 is a C—C bond; R^4 and R^5 are each H, alkyl or phenyl; and Ar is phenyl or phenyl monosubstituted or disubstituted by alkyl, F, Cl, Br, I or CF_3; wherein alkyl in each case is of 1–4 carbon atoms; and

the physiologically acceptable acid addition salts thereof.

4,251,539

AMINO DERIVATIVES OF 3-ALKYL-5-(2-HYDROXYSTYRYL)-ISOXAZOLES

Peter C. Thieme, Wachenheim; Fritz-Frieder Frickel, Ludwigshafen; Hans Theobald, Limburgerhof; Albrecht Franke, Wachenheim; Dieter Lenke, Ludwigshafen, and Josef Gries, Wachenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

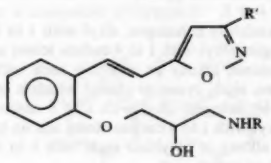
Filed Apr. 17, 1979, Ser. No. 30,927

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1978, 2818999

Int. Cl.[3] **C07D** *261/08;* **A61K** *31/42*

U.S. Cl. 424—272 **16 Claims**

1. A compound of the general formula I



(I)

where R is hydrogen, alkyl of 1 to 8 carbon atoms, which is unsubstituted or substituted by hydroxyl, alkoxy of 1 to 3 carbon atoms or cycloalkyl with 3 to 8 carbon atoms in the ring, alkenyl or alkynyl of 2 to 8 carbon atoms, or cycloalkyl with 3 to 8 carbon atoms in the ring, the cycloalkyl rings being unsubstituted or mono- or di-substituted by alkyl of 1 to 3 carbon atoms, and R′ is alkyl of 1 to 4 carbon atoms and its addition salts with acids.

4,251,540

COMBATING CROP DAMAGING FUNGI WITH α-(4-BIPHENYLYL)-BENZYL-AZOLIUM SALTS

Erik Regel; Wilfried Draber; Karl H. Büchel, all of Wuppertal; Peter Kraus, Cologne, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

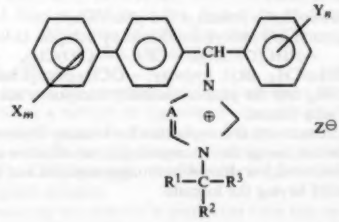
Continuation of Ser. No. 885,247, Mar. 10, 1978, abandoned. This application Sep. 6, 1979, Ser. No. 73,171

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1977, 2714290

Int. Cl.[3] **A01N** *43/50, 43/56*

U.S. Cl. 424—273 R **5 Claims**

1. A method of combating fungi which damage crops which comprises applying to the fungi, to seed or to soil, a fungicidally effective amount of an α-(4-biphenyl)-benzyl-azolium salt of the formula



A is CH or N,

R^1 and R^2 each independently is hydrogen, alkyl with 1 to 4 carbon atoms, or phenyl optionally substituted by fluoride, chlorine, bromine, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with 1 to 4 carbon atoms, nitro or cyano,

R^3 is phenyl, or phenylcarbonylalkyl with 1 to 4 carbon

atoms in the alkyl moiety, the phenyl, phenylcarbonyl or phenylcarbonylalkyl radical being optionally substituted by fluorine, chlorine, bromine, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy with 1 to 4 carbon atoms, nitro, cyano or phenyl which is itself optionally substituted by fluorine, chlorine, bromine, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with 1 to 4 carbon atoms, nitro or cyano,

m is 0, 1, 2, 3, 4 or 5,

X each independently is halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with 1 to 4 carbon atoms, nitro or cyano.

n is 0, 1, 2, 3, 4 or 5,

Y each independently is halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with 1 to 4 carbon atoms, nitro, cyano or phenyl which is optionally substituted by halogen, alkyl with 1 to 6 carbon atoms, halogenoalkyl with 1 to 4 carbon atoms and up to 5 halogen atoms, alkoxy or alkylthio each with 1 to 4 carbon atoms, nitro or cyano, and

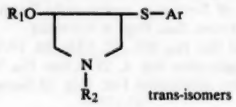
Z is the anion of an inorganic or organic acid.

4,251,541
1-SUBSTITUTED-3-ARYLTHIO-4-HYDROXYPYRROLIDINES

David A. Walsh, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Filed Jan. 9, 1979, Ser. No. 2,103
Int. Cl.³ C07D *207/12*; A61K *31/40*
U.S. Cl. 424—274 **12 Claims**

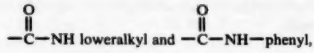
1. A compound selected from 1-substituted-3-arylthio-4-hydroxypyrrolidines and derivatives thereof having the formula:



trans-isomers

wherein;

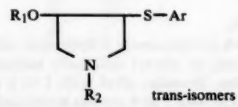
R_1 is hydrogen, loweralkyl,



R_2 is loweralkyl, cycloalkyl and phenylalkyl,

Ar is phenyl and phenyl substituted by halogen, O-loweralkyl, —NHC(O)(CH_3), CF_3, —C(O)CH_3, —CH$_2$—CH=CH_2, alkyl, hydroxy, —OCH_2-phenyl and —C(O)NH_2, and the pharmaceutically acceptable acid addition salts thereof.

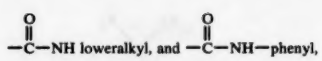
9. A pharmaceutical composition for treating depression in animals in unit dosage form comprising (a) an effective amount of a 1-substituted-3-arylthio-4-hydroxypyrrolidine and derivatives thereof having the formula:



trans-isomers

wherein

R_1 is hydrogen, loweralkyl,



R_2 is loweralkyl, cycloalkyl and phenylalkyl,

Ar is phenyl and phenyl substituted by halogen, O-loweralkyl, —NHC(O)CH_3, CF_3, —C(O)CH_3, —CH$_2$—CH=CH_2, alkyl, hydroxy, —OCH_2-phenyl and —C(O)NH_2,

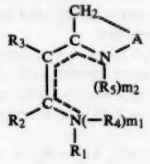
the pharmaceutically acceptable acid addition salts thereof, and (b) a pharmaceutical carrier therefor.

4,251,542
IMINO COMPOUNDS

Atso Ilvespää, Allschwil, and Walter Fuhrer, Frenkendorf, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 771,294, Feb. 23, 1977, Pat. No. 4,130,652. This application Sep. 20, 1978, Ser. No. 944,220
Claims priority, application Switzerland, Feb. 27, 1976, 2441/76
Int. Cl.³ A61K *31/40*; C07D *207/08, 207/12*
U.S. Cl. 424—274 **8 Claims**

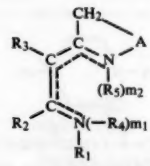
1. A compound of the formula I



(I)

wherein R_1 represents a saturated aliphatic hydrocarbon radical which has a maximum of 8 carbon atoms, or a saturated cycloaliphatic hydrocarbon radical having 5 to 12 carbon atoms, R_2 represents thienyl which is unsubstituted or substituted by lower alkyl or by halogen up to atomic number 35, R_3 represents hydrogen, R_4, if present, represents lower alkyl, R_5, if present, represents hydrogen or lower alkyl, A represents ethylene, and m_1 and m_2 represent 0 or 1 and together always represent 1, and wherein the two additional bonds, either corresponding to the dashed lines or corresponding to the dotted lines, are present, with m_1 representing 0 in the former case and m_2 representing 0 in the latter case, and its acid addition salts.

7. A pharmaceutical composition for the oral treatment of hyperglycaemia in mammals comprising a hypoglycaemically effective amount of a compound according to claim 1 and having the formula I



(I)

wherein R_1 represents a saturated aliphatic hydrocarbon radical which has a mazimum of 8 carbon atoms, or a saturated cycloaliphatic hydrocarbon radical having 5 to 12 carbon atoms, R_2 represents thienyl which is unsubstituted or substituted by lower alkyl or by halogen up to atomic number 35, R_3 represents hydrogen, R_4, if present, represents lower alkyl, R_5, if present, represents hydrogen or lower alkyl, A represents ethylene, and m_1 and m_2 represent 0 or 1 and together always represent 1, and wherein two additional bonds, either corre-

sponding to the dashed lines or corresponding to the dotted lines, are present, with m_1 representing 0 in the former case and m_2 representing 0 in the latter case, or pharmaceutically acceptable salt together with a pharmaceutical carrier.

4,251,543

2-(P-PRENYLPHENYL)PROPIONIC ACID

Takehiro Amano, Urawa; Jiro Sawada, Kodaira, and Michitada Sasajima, Higashimurayama, all of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jun. 4, 1979, Ser. No. 45,090

Claims priority, application Japan, Jun. 10, 1978, 53/70223

Int. Cl.³ C07C *69/618*

U.S. Cl. 424—317 **2 Claims**

1. 2-(p-prenylphenyl)propionic acid and pharmaceutically acceptable salts thereof.

2. A method of treating a mammal for pain or abnormally high fever comprising administering to said mammal an analgesic or anti-inflammatory effective amount of a compound of claim 1.

4,251,544

FUNGICIDAL PROCESS USING 1-(ALKYLACYL) GUANIDINES

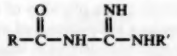
Bruce M. Resnick, West Paterson, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 76,682

Int. Cl.³ A01N *37/18*

U.S. Cl. 424—320 **16 Claims**

1. A process for protecting plants and plant parts from attack by fungi which comprises contacting a plant or plant part with fungicidally effective amount of at least one fungicide having the formula:



wherein R is alkyl having from 4 to 22 carbon atoms and R′ is hydrogen or alkyl of from 1 to 4 carbon atoms.

4,251,545

FUNGICIDAL PROCESS USING 1-(ALKOXYAROYL)GUANIDINES

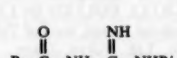
Bruce M. Resnick, West Paterson, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Sep. 19, 1979, Ser. No. 76,683

Int. Cl.³ A01N *37/18*

U.S. Cl. 424—324 **19 Claims**

1. A process for protecting plants and plant parts from attack by fungi which comprises contacting a plant part with fungicidally effective amount of at least one fungicide having the formula:



wherein R contains from 7 to 30 carbon atoms and is alkoxyphenyl, alkenyloxyphenyl or alkoxynaphthyl, which radicals are optionally substituted with a member selected from the group consisting of halogen, hydroxy and alkyl of from 1 to 2 carbon atoms; and R′ is hydrogen, alkyl of from 1 to 4 carbon atoms or R.

4,251,546

PROCESS FOR KILLING INTERNAL HELMINTHS USING CERTAIN 1,1-BIS-(2-SUBSTITUTED-3-NITROPHENYL)ALKANE OR ALKYLENE DERIVATIVES

Errol-James McGarry, Bundoora; Bruce A. Forsyth, Croydon, and Colin Wilshire, East Doncaster, all of Australia, assignors to ICI Australia Limited, Melbourne, Australia

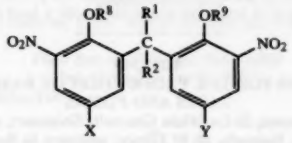
Filed Oct. 30, 1978, Ser. No. 955,605

Claims priority, application Australia, Nov. 8, 1977, PD2341

Int. Cl.³ A61K *31/055, 31/10, 31/22, 31/08*

U.S. Cl. 424—347 **12 Claims**

1. A process for killing internal helminths of warm-blooded animals which process comprises treating the infected animal with an effected amount of a composition comprising as active ingredient a compound of formula I



wherein R^1 and R^2 are independently chosen from the group consisting of hydrogen, C_1 to C_6 haloalkyl, C_1 to C_6 alkoxy, C_1 to C_6 alkoxyalkoxy, C_1 to C_6 alkylthio; aryloxy, arylthio, arylalkoxy and arylalkylthio wherein each aryl is phenyl substituted with one or more substituents selected from the group consisting of hydrogen, halogen, alkoxy, cyano and nitro provided that R^1 and R^2 are not both hydrogen; or R^1 and R^2 together form the group $=CR^6R^7$ wherein R^6 and R^7 are the same or different halogen; X and Y are the same or different halogen; and R^8 and R^9 are independently chosen from the group consisting of hydrogen, C_1 to C_6 alkanoyl, C_1 to C_6 alkoxycarbonyl and the cation of an inorganic or organic base.

4,251,547

FISH BAIT AND METHODS FOR ITS PREPARATION

James J. Liggett, 1235 Holly Dr., Twin Falls, Id. 83301

Filed Jun. 13, 1979, Ser. No. 48,070

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—1 **10 Claims**

1. A process for preparing fish bait comprising the steps

producing a mixture of ingredients comprising a flavoring agent of natural foods to which fish are attracted and an aqueous solution of sodium alginate in an amount of from 0.5 to 25% by weight based on the weight of the sodium alginate solution,

introducing said mixture in particulate form into an aqueous solution of a soluble calcium salt in an amount of from 0.5 to 25% by weight based on the weight of the calcium salt solution to produce particles having a resilient shell of solid calcium alginate,

separating said particles from said aqueous solution of calcium salt,

drying the separated particles at a temperature of less than 300° F. to facilitate their transportation and storage and subsequently rehydrating the dried particles.

4,251,548

CHEWING GUM AND METHOD OF PREPARATION THEREOF

Koichi Ogawa, Tokyo; Shichigoro Tezuka, Kawasaki; Masatoshi Terasawa, Tokorozawa, and Hisashi Ishikawa, Tokyo, all of Japan, assignors to Lotte Co. Ltd., Tokyo, Japan

Filed Aug. 2, 1979, Ser. No. 62,947

Claims priority, application Japan, Feb. 8, 1979, 54/12803

Int. Cl.[3] A23G *3/30*

U.S. Cl. 426—3 13 Claims

1. In a chewing gum composition having enhanced sweetness and taste which comprises a conventional gum base including natural resins, vinyl acetate resin, a rubber component, emulsifiers, wax, fillers sweetening agents, flavors, coloring agents, preservatives, all ingredients being present in effective proportions, the improvement which consists of from 0.025 to 5.0% by weight, based on the total weight of chewing gum composition, of an amino-carbonyl reaction product obtained by reaction of at least one amino acid with a least one sugar.

4,251,549

PROCESS FOR THE PRODUCTION OF BASES FOR TARTS AND PIZZAS

Gaston Fournet, St-Lo; Alain Gueroult, Goincourt, and Daniel Sauterey, Beauvais, all of France, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Sep. 15, 1978, Ser. No. 942,471

Claims priority, application France, Sep. 29, 1977, 77 29289; Jul. 20, 1978, 78 21508

Int. Cl.[3] A21D *6/00*

U.S. Cl. 426—19 7 Claims

1. A process for the production of bases for tarts or pizzas from pastry of dough rich in gluten containing biological yeast which comprises:

(a) kneading the pastry;

(b) dividing the pastry into lumps;

(c) allowing the lumps to stand for a short period of time; and then without preliminary rolling or rising,

(d) placing the pastry lumps in a hydraulic press equipped with a tool comprising a stamp, a die and a means for distributing a layer of air between the stamp and the pastry;

(e) forming the pastry lumps into layers having their edges raised at their periphery by means of the hydraulic press while a layer of air is distributed between the stamp and the pastry;

(f) subjecting the pastry layers to a single rise; and then

(g) baking the pastry layers to form the bases.

4,251,550

MEAL REPLACEMENT COMPOSITION

Richard I. Proctor, Loomis, Calif., assignor to Elaine Powers Nutrition Company, Inc., Milwaukee, Wis.

Filed Apr. 16, 1979, Ser. No. 30,324

Int. Cl.[3] A23L *1/30*

U.S. Cl. 426—72 4 Claims

1. A dry nutritional food composition consisting essentially of:

(1) protein material derived entirely from animal sources consisting of casein, calcium caseinate, sodium caseinate and non-fat milk solids providing a total protein content of between about 25 and 50 percent by weight,

(2) carbohydrate selected from the group consisting of fructose, dextrose and corn syrup solids providing a total carbohydrate concentration of between about 20 and 50 percent by weight,

(3) lipids in the form of partially hydrogenated vegetable oil along with a minor proportion of lecithin providing a total lipid content of between about 5 and 10 percent by weight,

(4) non-degradable vegetable fiber consisting of cellulose gum and cellulose gel in the form of finely divided microcrystalline cellulose present in the composition in an amount between about 0.5 and 1.0 percent by weight,

(5) flavoring agents in an amount of about one percent by weight along with vitamins and minerals, and

said nutritional food composition when mixed only with water being readily dispersible and forming a highly palatable liquid composition which contains sufficient bulk to avoid discomfort between meals when used as a complete meal replacement.

4,251,551

FOOD COMPOSITION AND METHOD FOR PREPARING CHEESE-COATED, PUFFED SNACKS UPON MICROWAVE HEATING

Glenn J. VanHulle, Brooklyn Park; Charles A. Anker, and Dean E. Franssell, both of Minneapolis, all of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Filed May 29, 1979, Ser. No. 43,573

Int. Cl.[3] A21D *2/34, 2/36;* A23L *1/18*

U.S. Cl. 426—94 12 Claims

1. A food composition which upon microwave heating yields a cheese-coated, puffed snack, comprising:

A. a puffing medium consisting essentially of:

1. from about 30% to 90% by weight of the puffing medium of an edible fatty triglyceride, and

2. from about 10% to 60% by weight of the puffing medium of dehydrated cheese solids, and wherein the puffing medium contains less than about 2% by weight of reducing sugars; and

B. a plurality of puffable preformed dough pieces dispersed through the puffing medium, said dough pieces comprising a gelatinized starch-containing dough having a moisture content of from about 5% to 15% by weight of the dough;

wherein the weight ratio of dough pieces to puffing medium is about 1:0.2 to 1:1.3.

8. A process for preparing a cheese-coated snack product by microwave heating, comprising the steps of:

A. forming a gelatinized starch-containing dough having a moisture content of about 12% to 25% by weight;

B. shaping the dough into a plurality of discreet pieces;

C. partially drying at a temperature of about 70° F. to 200° F. and at a relative humidity of at least 35% for a period of time sufficient to reduce the moisture content of the pieces of between about 5% to 15%;

D. dispersing the partially dried pieces throughout a puffing medium consisting essentially of, from about 30% to 90% by weight of the puffing medium, an edible fatty triglyceride and from about 10% to 60% by weight of dehydrated cheese solids; and wherein the weight ratio of puffing medium to the pieces is about 0.2:1 to 1.3:1 and wherein the puffing medium contains less than about 2% by weight of reducing sugars, to form a puffing medium piece matrix;

E. microwave heating the matrix for about 1–4 minutes to form a plurality of puffed pieces enrobed in a cheese coating; and,

F. cooling to room temperature to harden the cheese coating on the puffed pieces.

4,251,552

RICE-BALL ROLLED IN LAVER

Koki Uno, and Hirohumi Youda, both of Tokyo, Japan, assignors to Kyotaru Co., Ltd., Tokyo, Japan

Filed Jan. 8, 1979, Ser. No. 1,866

Claims priority, application Japan, Feb. 21, 1978, 53/20421[U]

Int. Cl.[3] B65B *11/48, 29/00*

U.S. Cl. 426—115 10 Claims

1. A rice-ball package for a laver rice-ball food article, said package comprising

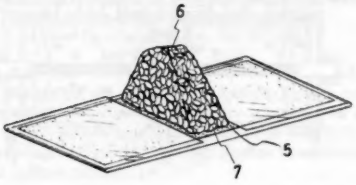
said rice-ball having a preformed shape,

a thin-laver sheet adapted to cover said rice-ball to form said laver rice-ball food article to be eaten,

a thin-pliant packing sheet formed of a fluid impervious material and comprising a length sufficient to be folded onto and substantially cover the top and bottom of said laver sheet,

said pliant packing sheet having opposite ends and a central portion,

said laver sheet being placed on said packing sheet, opposite ends of said packing sheet extending beyond said laver sheet and being folded inwardly on top of said unfolded laver sheet toward each other to substantially cover said unfolded laver sheet to form two pliant fluid-impervious



side panels separated at said central portion exposing a portion of the laver sheet,

said rice-ball being placed on said exposed portion of said laver sheet in said central portion, said two pliant fluid-impervious side panels including portions of said laver sheet covered by said packing sheet being folded on and conforming to the shape of said rice-ball enclosing said rice-ball to form a rice-ball package with the moisture of the rice-ball being substantially prevented from reaching said laver sheet,

said rice-ball package serving as a hand-held foodstuff,

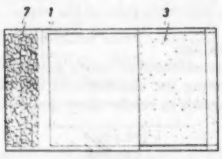
said pliant packing sheet being folded away from covering said laver in said two fluid-impervious side panels to form a laver covered rice-ball to be eaten.

4,251,553

SEASONED RICE ROLLED IN LAVER

Toshiaki Kobayashi, Tokyo, Japan, assignor to Kyotaru Co., Ltd., Tokyo, Japan

Filed Jan. 29, 1979, Ser. No. 7,565
Int. Cl.³ B65B *29/00, 25/06, 11/00;* **B65D** *75/04*
U.S. Cl. 426—115 **9 Claims**



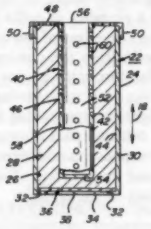
1. A wrapped seasoned rice ball rolled in laver comprising an elongated moisture-proof sheet having a first and second end, a sheet of laver placed on a portion of said moisture-proof sheet within the borders of said moisture-proof sheet and adjacent the first end of said moisture-proof sheet, a rice-ball placed centrally on said moisture-proof sheet and separated from said sheet of laver, a separate portion of said moisture-proof sheet including the second end of said moisture-proof sheet being folded onto said rice-ball and onto a portion of the top of said sheet of laver to cover same with the rice-ball and laver maintained out of contact with each other and with the covered rice-ball rolled within the moisture-proof sheet to form a cylindrical shape, the seasoned rice ball being substantially completely surrounded by said separate portion of the moisture-proof packing sheet wrapped therearound, and said laver wrapped around the seasoned rice and said separate portion of the moisture-proof packing sheet, wherein said separate portion of said moisture-proof packing sheet is located therebetween maintaining the rice and laver out of physical contact with each other.

4,251,554

EDIBLE FOOD CONTAINER AND MOLD FOR FORMING SAME

C. Robert Baisden, 11127 Willow Bottom Dr., Columbia, Md. 21044

Filed Jun. 6, 1979, Ser. No. 46,033
Int. Cl.³ A21D *10/02, 8/02*
U.S. Cl. 426—128 **2 Claims**



1. A container mold for processing a food product contained therein and facilitating removal therefrom, comprising:

(a) outer housing means extending in a longitudinal direction being substantially cylindrically contoured providing a first internal diameter having a central cavity for insertion of a food product to be processed, said outer housing means defining a tubular member having an annularly contoured flange member secured to a lower section of a sidewall of said tubular member, said flange member extending to the interior of said tubular member, thereby providing a second centrally positioned internal diameter opening of said tubular member;

(b) a disc member having a diameter substantially equal to said first internal diameter, said disc member being displaceably mounted on said annularly contoured flange member;

(c) an inner housing tubular member resting on the top of said outer housing means and extending longitudinally internal of said central cavity of said outer housing means and spaced from the sides and bottom thereof defining an inner housing cavity having a closed bottom and an open end upper section, said inner housing tubular member having a plurality of openings formed through a sidewall thereof for venting gases produced during food product processing, said food product being contained between said inner housing tubular member and said outer housing means; and,

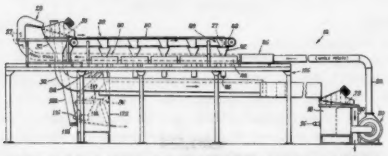
(d) a cap member fixedly secured to said inner housing tubular member and around said outer housing tubular member sidewall, said cap member including a cap flange member matingly engaging an outer surface of said outer housing means and positionally locating said inner housing tubular member substantially central said outer housing means cavity.

4,251,555

METHOD AND SYSTEM FOR PROCESSING POTATOES

Hans E. K. Kroenig, Hilden, Fed. Rep. of Germany, assignor to Dufrit Kartoffel Verarbeitung Kroenig GmbH & Co. KG, Monheim, Fed. Rep. of Germany

Filed Feb. 21, 1979, Ser. No. 13,463
Int. Cl.[3] G01N *33/02*
U.S. Cl. 426—231 13 Claims



1. A method of sorting raw potato sticks to separate out those having black or discolored spots thereon and snipping the ends of the separated sticks to remove the spots, comprising the steps of providing individual raw sticks in a liquid medium in a liquid transporting means from a source, separating the sticks from the liquid medium, sorting the sticks in air by dividing the separated sticks as they are conveyed on a conveyor belt into a plurality of paths that terminate at separate points along the side edges of the conveyor belt, dropping the sticks individually from the conveyor belt at the end of each path for free-fall through a photoelectric scanner located therebelow, detecting each stick having a dark or discolored spot, providing a signal corresponding to each such detection, ejecting each such detected stick during free-fall thereof to an alternative path in response to said signal, snipping the ends of the ejected sticks, and transporting all sticks not ejected away for further processing or packaging.

4,251,556

PET FOOD WITH CASEINATE REPLACEMENT

Morris P. Burkwall, Jr., Barrington; Joseph C. Leyh, Jr., Cary, both of Ill., and John G. Reagan, Kent, Wash., assignors to The Quaker Oats Company, Chicago, Ill.

Continuation of Ser. No. 749,814, Dec. 13, 1976, which is a division of Ser. No. 578,729, May 19, 1975, abandoned. This application Nov. 13, 1978, Ser. No. 959,641
Int. Cl.[2] A23K *1/10*
U.S. Cl. 426—332 10 Claims

1. A substantially solid, semi-moist animal food comprising:
(a) from about 5% to about 50% meat or meat by-products;
(b) from about 15% to about 50% moisture content:
(c) from about 10% to about 35% sugar;
(d) from about 1% to about 10% of at least one polyhydric component;
(e) up to about 0.5% antimycotic;
(f) from about 4% to about 25% of a starch system;
(g) 0% to about 25% additives; and
(h) about 7.5% to about 25% of a protein system, the protein system comprising 1% to 25% of a non-alkali modified soy protein isolate and 0% of a casein salt,
all percentages being based on the weight of the food; wherein the non-alkali modified soy protein isolate completely replaces the casein salt with regard to protein content, and wherein the starch system and the non-alkali modified soy protein isolate combine to replace all functions of the casein salt.

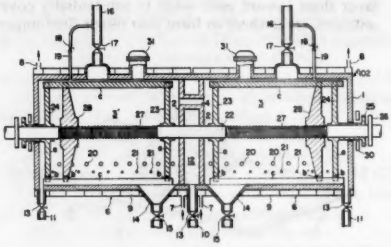
6. The food of claim 1 wherein the meat comprises from about 15% to about 35% by weight, the sugar comprises from about 15% to about 25% by weight, the starch system comprises from about 8% to about 20% by weight, and the moisture content is 20% to 35% by weight.

4,251,557

ENCLOSED SYSTEM FOR A BATCH PROCESS FOR THE MANUFACTURE OF FISH MEAT

Takuma Shimose, Shimonoseki, and Masato Tanaka, Ube, both of Japan, assignors to Shimose Shokuhin Co., Ltd., Yamaguchi, Japan

Filed Jun. 13, 1979, Ser. No. 48,235
Claims priority, application Japan, Jun. 12, 1978, 53-70616
Int. Cl.[3] A23C *12/02*
U.S. Cl. 426—417 1 Claim



1. A batch process for processing fish material under closed conditions to avoid the escape of foul-smelling vapors and gases in the atmosphere comprising the steps of:
a. precooking a batch of raw fish at high temperature and pressure in the presence of high temperature and pressure steam in a treating zone with constant stirring to form precooked fish meat,
b. reducing the pressure in the treatment zone,
c. compressing the precooked fish meat in the treatment zone to express press water containing fish solubles, fish meat particles and oil therefrom,
d. discharging the press water from the treatment zone,
e. treating the discharged press water to recover oil, fish meat and stickwater containing fish solubles,
f. after the discharge of the press water from the treatment zone, externally heating the treating zone,
g. removing the pressure from the pre-cooked fish meat in the treating zone,
h. drying the fish meat within the heated treating zone with stirring and under reduced pressure,
i. removing the dried precooked fish meat from the treatment zone,
j. removing vapors from the treating zone formed during the drying step, (h), said vapors comprising offensive gases and containing solid fish meat particles,
k. cooling the said vapors in a condensing zone,
l. condensing condensible gases in the vapors in the condensing zone to form an aqueous dispersion containing fish meat particles, and
m. removing uncondensed offensive gases from the condensing zone treating the uncondensed offensive gases with chemical reagents to render them innocuous.

4,251,558

METHOD OF MAKING GRANULAR BEAN PASTE

Masakazu Kobayashi, Tokyo; Kenji Abo, Aomori, and Koh Harashima, Kawaguchi, all of Japan, assignors to Kanesa Miso Kabushiki-Kaisha, Aomori, Japan

Filed Aug. 6, 1979, Ser. No. 64,089
Int. Cl.[3] A23B *4/04*
U.S. Cl. 426—473 3 Claims

1. A method of manufacturing granular bean paste from bean paste, without subjecting the paste to high temperatures or pressures which would degrade the paste, which comprises
forming a bean paste having a water content above its plastic limit and distributed uniformly throughout the paste, said water content being about 20 to 30% on wet basis,
extruding said bean paste in strip form into a chamber kept

under a vacuum or near to but less than about 4.6 Torr., whereby as the extruded strips of bean paste are subjected to said vacuum, a portion of their water content is instantly evaporated and the strips are instantly cooled down by said evaporation under the vacuum to such an extent that said strips are hardened and therefore maintain their forms without adhering to each other, and

granulating said extruded strips to granules.

4,251,559

DECAFFEINATION PROCESS

Geoffrey Margolis, Bussigny, and Jacky Chiovini, Daillens, both of Switzerland, assignors to Societe d'Assistance Technique pour Produits Nestle S.A., Lausanne, Switzerland

Filed Nov. 6, 1978, Ser. No. 957,822
Int. Cl.[3] A23F 5/22
U.S. Cl. 426—490 8 Claims

1. A process for the extraction of caffeine from a caffeine solution which comprises contacting the solution with supercritical carbon dioxide having a density of at least 0.85 g/ml and separating caffeine-laden carbon dioxide from solution of reduced caffeine content.

4,251,560

CREAM-CONTAINING FROZEN WHIPPED TOPPING COMPOSITION

William J. Dell, Fishkill; William E. Flango, Jr., Hopewell Junction; William H. Povall, Fishkill, all of N.Y.; Lawrence H. Freed, Clifton, N.J., and Susan D. Fencl, Weston, Conn., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 21, 1979, Ser. No. 68,360
Int. Cl.[3] A23C 13/12
U.S. Cl. 426—565 17 Claims

1. Process for preparing a frozen whipped topping composition containing milk fat and having extended stability upon thawing and refrigerated storage by retaining its volume and smooth, continuous and fluffy texture comprising:

(a) blending into a mix 15 to 30% by weight of a milk fat, 15 to 35% by weight of a carbohydrate, 0.2 to 2.0% by weight of an emulsifier, 0.02 to 0.2% by weight of a stabilizer, 35 to 65% by weight of a water and an amount of a crosslinked and hydroxypropylated starch effective to impart extended refrigerated storage stability;

(b) solubilizing and dispersing the mix by subjecting the mix to heat;

(c) homogenizing said mix at pressures of at least 6,000 p.s.i. to form an emulsion;

(d) cooling said emulsion to a temperature and for a period of time effective to allow the fat to crystalize;

(e) whipping and aerating said cooled emulsion to an overrun of at least 200% by volume; and

(f) freezing said whipped emulsion.

4,251,561

LOW-MOISTURE, FRANGIBLE AERATED CONFECTIONS AND METHOD OF PREPARATION

Robert J. Gajewski, Crystal, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 4, 1979, Ser. No. 45,036
Int. Cl.[3] A23G 3/00
U.S. Cl. 426—571 23 Claims

1. A low moisture, frangible, non-hydroscopic aerated confection comprising:

A. from about 87% to 99% by weight of dextrose;

B. from about 0.3% to 3% by weight of a whipping agent selected from the group consisting of protein hydrolyzates, egg whites and gelatin;

C. less than about 7% by weight moisture; and wherein the density of the confection is from about 0.2 to 1.0 g./cc.

4,251,562

METHOD FOR PRODUCING AN EDIBLE GEL

Charles G. G. R. LeGrand, "Les Ombrages III" 14, Avenue de Creully, Caen (Calvados), and Roger A. E. C. Paul, Saint Etienne La Thillaye, Calvados, both of France

Continuation-in-part of Ser. No. 696,378, Jun. 15, 1976, abandoned. This application Oct. 10, 1978, Ser. No. 949,543
Claims priority, application France, Jun. 20, 1975, 75 19373; Mar. 31, 1976, 76 09388; Apr. 13, 1976, 76 10835
Int. Cl.[3] A23L 1/04; A23C 21/00
U.S. Cl. 426—573 11 Claims

1. Method for making a gel having rheology characteristics comparable to those of an egg-white gel or a gelatin gel, comprising forming a mixture of

(a) a sol of whey proteins containing about 3% to about 7% of whey proteins on a dry weight basis, said whey proteins being substantially separated from lactose and inorganic salts present in whey,

(b) glucides having a dry solid content of about 20% to about 40% based on the total weight of the mixture, and chosen from the group consisting of saccharose, an ultrafiltrate of sweet milk whose lactose content was hydrolyzed to the extent of 75–95% and mixtures of these products, and

(c) added water in an amount of about 40% to about 70% based on the total weight of the mixture, said mixture containing less than 10% of proteins on a dry weight basis,

and heating the mixture at a pressure sufficient to avoid boiling in the range between about one and three bars, at a temperature of between 80° C. and 140° C. for a time which is shorter as the temperature is higher of about 30 minutes or less.

4,251,563

COMPOSITIONS CONTAINING N-NITROSAMINE FORMATION OR OXIDATION INHIBITORS AND THE USE THEREOF

Gordon D. Gruetzmacher, Gales Ferry, and Leonard J. Czuba, New London, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 20,883
Int. Cl.[3] A23D 5/00; A61K 31/375
U.S. Cl. 426—605 6 Claims

1. A method of inhibiting N-nitrosamine formation in an emulsified preparation, which comprises:

combining the preparation containing amines, hydroxy amines, amino acids, proteins, phospholipids or quaternary ammonium compounds that are capable of forming N-nitrosamines and

an inhibitory amount of erythorbyl or ascorbyl laurate or erythorbyl caprate.

4,251,564

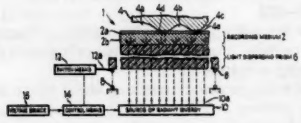
HEAT-SINK IMAGING METHOD AND APPARATUS FOR LIVE SKIN TISSUE USING PULSED ENERGY SOURCE

Vincent D. Cannella, 19519 Cranbrook. Apt. 216, Detroit, Mich. 48221, and Mark H. McCormick-Goodhart, 819 Notre Dame, Grosse Pointe Woods, Mich. 48230

Filed Feb. 12, 1979, Ser. No. 11,155
Int. Cl.[3] A61B 5/10
U.S. Cl. 427—1 7 Claims

1. A method of recording the surface topology of live skin tissue comprising the steps of: providing a recording medium having a substrate upon one side of which there is a layer of a heat-responsive-imaging material which, upon conduction of a given amount of heat energy to any given portion thereof will be heated to a given imaging temperature in the absence of any substantial heat-sinking applied to said one side of the recording medium; applying said live skin tissue against the imaging layer containing side of the recording medium so that projecting portions of the live skin tissue act as effective heat-sinks at

the points where it is most contiguous thereto to dissipate heat thereat to an extent where said imaging material is not imaged appreciably, if at all, by said amount of heat energy conducted to the portion of said imaging material involved from said substrate and wherein the heat-sinking effect of the live skin tissue where recessed portions thereof are located is so minimal as not to prevent said given amount of heat energy from raising the temperature of the portion of the recording medium involved to said imaging temperature; and then applying a pulse of energy to the substrate side of said recording medium which will provide heat energy in said substrate which is conducted in at least said given amount to each of the various portions of said layer of imaging material, said pulse of energy being applied to said substrate side of said recording medium only while said live skin tissue is in contact with said recording medium.



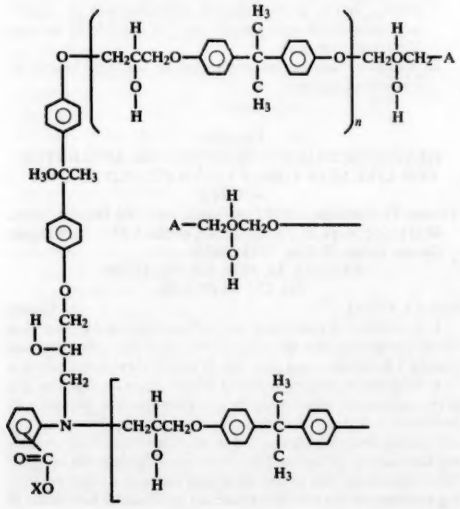
4,251,565

USE OF A POLYFUNCTIONAL SURFACE-ACTIVE COMONOMER AND OTHER AGENTS TO IMPROVE ADHESION BETWEEN A RESIN OR COMPOSITE MATERIAL AND A SUBSTRATE

Rafael L. Bowen, Gaithersburg, Md., assignor to American Dental Association Health Foundation, Washington, D.C.

Filed Feb. 9, 1979, Ser. No. 10,803
Int. Cl.[3] A10N *1/02*
U.S. Cl. 427—2 **28 Claims**

1. A method of improving the adhesion of a resin or composite material to a solid surface capable of binding polyvalent cations which comprises applying to the surface prior to application of the resin or composite material a polyfunctional surface-active comonomer comprising a compound of the formula



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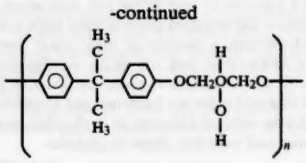
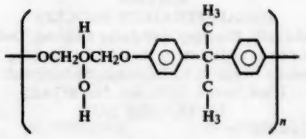
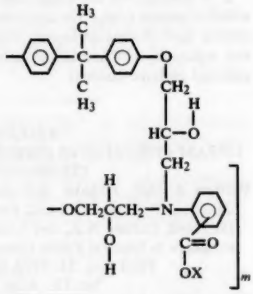
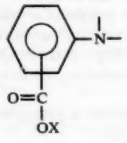






where A is a monomer polymerizable by free radical polymerization, X is a univalent metal cation or hydrogen, m is an integer which may vary between 0 and 10, n is an integer which may vary between 0 and 2, and the aminobenzoate structure



represents ortho-, meta- or para-aminobenzoate.

4,251,566

GUM THICKNESS REGULATOR

David L. Gingerich, Farmington, Mich., assignor to Champion International Corporation, Stamford, Conn.

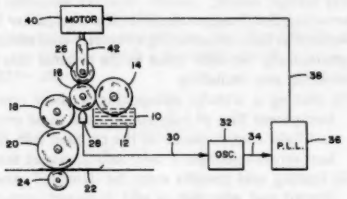
Filed Oct. 12, 1978, Ser. No. 950,627
Int. Cl.[3] B05C *5/00, 1/02;* **B05D** *1/02*
U.S. Cl. 427—10 **8 Claims**

7. A method of regulating the thickness of gum on the surface of a metallic gum transfer roller employed in the transfer of gum to a product, comprising the steps of:

a. supplying gum to the surface of the gum transfer roller;

b. determining the thickness of the gum on the gum transfer roller surface by juxtaposing a capacitor plate on the opposite side of the gum on the gum transfer roller whereby the gum on the gum transfer roller surface forms a dielectric of said capacitor and producing an AC output signal which varies in accordance with the changes in the capacitance of said capacitor, said changes in capacitance being produced by variations in said dielectric whereby

said AC output signal varies in accordance with the thickness of the gum on said roller surface; and



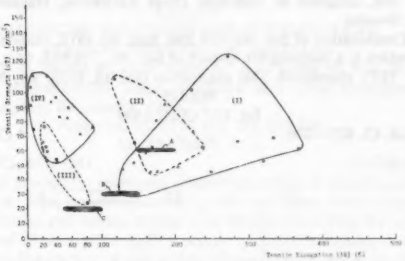
c. automatically adjusting the amount of gum supplied to said gum transfer roller surface in accordance with said AC output signal.

4,251,567

PROCESS FOR PRODUCING A FIBROUS MILK PROTEIN PRODUCT

Shuzo Ohyabu; Syuji Kawai; Hiroyuki Akasu, all of Kurashiki; Takeo Akiya; Keiji Matsumura, both of Takatsuki; Naoki Yagi, Suita; Kwang Young Kim, Habikino, and Tarushige Nakaji, Yao, all of Japan, assignors to Kuraray Co., Ltd. and Minaminihon Rakuno Kyodo Kabushiki Kaisha, both of, Japan

Filed Sep. 21, 1978, Ser. No. 944,525
Claims priority, application Japan, Sep. 30, 1977, 52-118480
Int. Cl.[3] A23J *1/20*
U.S. Cl. 426—580 **9 Claims**



1. A process for producing a fibrous milk protein product having a high tensile elongation and stability to hot water cooking, which comprises forming a starting milk protein into a fibrous composition, and contacting the fibrous composition with an aqueous solution containing at least one salt selected from the group consisting of a sodium salt, a potassium salt and a calcium salt in a cationic concentration of 1 gram equivalent/liter or more and a compound containing an aldehyde group and having a ratio of molecular weight (M) to number of aldehyde groups in one molecule (n) of 120 to 360, said aldehyde compound being present in the solution in an amount of 5 to 200 g/liter, the aqueous solution having a pH value of 2.5 to 6.5, said fibrous composition being maintained in contact with said solution at a temperature of 100 to 140° C. for 20 minutes to 3 hours.

4,251,568

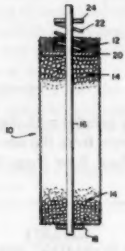
METHOD OF STORING ELECTRICAL ENERGY

Thomas G. Hart, Royal Oak, Mich., assignor to Energy Development Associates, Inc., Madison Heights, Mich.

Filed Aug. 27, 1979, Ser. No. 70,110
Int. Cl.[3] H01M *10/44*
U.S. Cl. 429—49 **13 Claims**

1. A method of charging an electrical energy storage device having an electrode compartment means containing therein at least one positive and one negative electrode comprising the steps of providing a positive electrode consisting essentially of ungraphitized carbon as the active electrode material, providing an electrolyte solution containing an aqueous halide which contacts the positive and negative electrodes, and passing a current through said electrolyte, said current being maintained at a level which maintains the voltage below the decomposition voltage of said halide electrolyte which would result in formation of free halogen.

13. An electrical energy storage device, said storage device comprising electrochemically treated ungraphitized carbon,



said electrochemical treatment including the steps of placing said ungraphitized carbon in an electrochemical cell as the positive electrode thereof, providing a negative electrode and an aqueous halide electrolyte solution which contacts the positive and negative electrode and passing a current through said electrolyte, said current being maintained at a level which maintains the voltage below the decomposition voltage of said halide electrolyte which would result in formation of free halogen, said ungraphitized carbon having been electrochemically treated for a time sufficient to store a substance in said carbon which may be recovered as electrical energy.

4,251,569

METHOD OF COATING ARC DISCHARGE LAMP ELECTRODE

Eric L. Mager, Beverly, and Willy P. Schreurs, Danvers, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Oct. 22, 1975, Ser. No. 624,627
Int. Cl.[3] H01J *9/02, 1/14;* **H05B** *31/00, 31/14*
U.S. Cl. 427—58 **2 Claims**

1. The method of coating an arc discharge lamp electrode comprising the step of preparing a highly loaded suspension of alkaline earth carbonates in a liquid vehicle consisting essentially of a water solution of multipurified lignosulfonic acid, ammonia and a liquid hydroxy compound to a loading greater than about 1.75 grams of carbonates per milliliter of liquid vehicle, and applying said suspension to said electrode to deposit thereon a higher-than-normal coating weight.

4,251,570

COLD SUBSTRATE GROWTH TECHNIQUE FOR SILICON-ON-CERAMIC

J. David Zook, Dakota, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 19, 1979, Ser. No. 95,729
Int. Cl.[3] B05D *1/18, 5/12, 1/36*
U.S. Cl. 427—74 **6 Claims**

1. An improved method for growing a layer of polycrystalline silicon on a substrate from a source of molten silicon comprising the steps of:

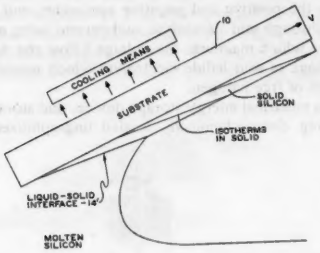
providing a source of molten silicon;

providing a substrate to grow a silicon layer on;

transporting the substrate with respect to and proximate the molten silicon whereby contact is made between the mol-

ten silicon and the substrate surface causing a silicon layer to grow on said surface; and

tilting the solid-liquid interface of the growing silicon layer



to be substantially parallel with the substrate by the step of cooling the substrate from the non-coated side to provide a unidirectional heat flow from the silicon layer to the cooled substrate.

4,251,571

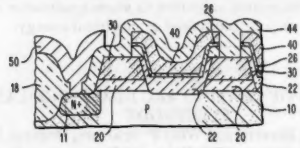
METHOD FOR FORMING SEMICONDUCTOR STRUCTURE WITH IMPROVED ISOLATION BETWEEN TWO LAYERS OF POLYCRYSTALLINE SILICON

Paul L. Garbarino, Ridgefield, Conn.; Stanley R. Makarewicz, New Windsor, and Joseph F. Shepard, Hopewell Junction, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 2, 1978, Ser. No. 902,127

Int. Cl.³ H01L *21/316*

U.S. Cl. 427—89 **7 Claims**



1. A method for forming insulated polycrystalline silicon conductors for field effect devices comprising:

forming a silicon dioxide gate insulating layer on a silicon substrate;

forming a first polycrystailine silicon electrode over a portion of said gate insulating layer;

forming a composite insulating layer over said first polycrystalline silicon electrode particularly at vertical surfaces thereof while simultaneously forming a composite gate insulating layer; and

forming a second polycrystalline silicon electrode over said composite gate insulating layer and at least a portion of said composite insulating layer.

4,251,572

METHOD OF RESTORING OR REPAIRING REFLECTIVE GLASS

Siegfried H. Herliczek, Ottawa Lake, Mich., and Lazarus D. Thomas, Maumee, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Dec. 12, 1975, Ser. No. 640,035

Int. Cl.³ B32B *35/00*

U.S. Cl. 427—142 **1 Claim**

1. A method of repairing damaged areas in an original thin light transmitting film exhibiting a color and deposited on the surface of a transparent glass substrate, said film comprising one or more layers of a material selected from the group consisting of a metal, metal halide, metal oxide and mixtures thereof, comprising the steps of:

a. cleaning the damaged areas in the original film to remove any foreign debris;

b. covering the damaged areas with a transparent filler having similar light transmitting characteristics and exhibiting substantially the same color as the original thin film, said covering step including:

(1) placing a transfer comprising a sheet containing a transparent film of substantially the same composition and light transmittance as the original thin film and a heat sensitive adhesive over said damaged areas; and

(2) heating said transfer over the damaged areas to first deposit said adhesive in said damaged areas and then release said transparent film from said transfer whereby said transparent film adheres to and fills the damaged areas in the original thin film; and

c. coating said filler with a transparent protective layer capable of physically protecting said filler whereby the light transmittant characteristics of the repaired damaged areas are substantially the same as the light transmittant characteristics of the original thin film.

4,251,573

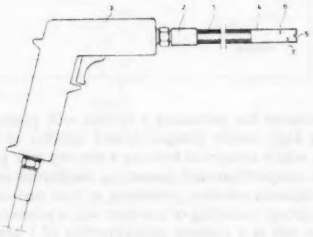
METHOD FOR RUST-PROTECTING TREATMENT

Claes H. Holm, and John Paulsson, both of Hässleholm, Sweden, assignors to Tuff-Kote Dinol Aktiebolag, Hässleholm, Sweden

Continuation of Ser. No. 828,196, Aug. 26, 1977, abandoned, which is a continuation-in-part of Ser. No. 779,915, Mar. 21, 1977, abandoned. This application Oct. 18, 1978, Ser. No. 952,489

Int. Cl.³ C01C *3/00*

U.S. Cl. 427—236 **4 Claims**



1. A method for applying a rust-protecting agent in straight as well as curved hollow spaces by means of airless spraying, comprising the steps of:

introducing a flexible hose horizontally into the hollow space to be treated, said hose having a nozzle disposed at its front end;

said nozzle formed to give a constant circular spray field directed radially from the bore of said hose;

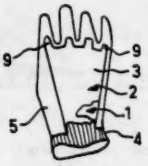
introducing through said hose by airless dispensing means a rust-protecting agent under a steady pressure of at least four MPa such that the front end of the hose carrying the nozzle partly rises from the inner surface of the hollow space due to the forces exerted on the nozzle by the rust-protecting agent issuing therefrom thereby stably suspending the nozzle within the hollow space; and

withdrawing the hose through all the hollow space.

4,251,574
METHOD OF MOLDING GLOVES

Francis T. Berend, Boulogne-sur-Seine, France, assignor to Societe Anonyme Parinter, France

Filed Oct. 21, 1977, Ser. No. 844,404
Claims priority, application France, Oct. 22, 1976, 76 31871
Int. Cl.[3] B05D 1/32; B05C 13/02
U.S. Cl. 427—282 6 Claims



1. The method for dip-coating preformed fabric gloves, comprising: disposing said preformed fabric gloves upon mating glove forms, said forms having mutually contacting areas when two said forms, bare of gloves, are in closed position; closing said forms together so as to exclude subsequently applied coating material from portions of said gloves between said forms; dipping the closed forms with said gloves into a bath of hardenable coating material; removing the so-covered and coated, closed forms from the bath; initiating a draining of an excess of the protected coating material from the closed forms; opening the forms; and thereupon completing the draining, while retaining and gelling portions of said coating on the gloves.

4,251,575
CHEMICAL TREATMENT OF POLY(ARYLENE SULFIDE)-CONTAINING ARTICLES

Donnie G. Brady; Ralph P. Williams, and Harold W. Hill, Jr., all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 31, 1974, Ser. No. 519,566
Int. Cl.[3] B05D 3/10
U.S. Cl. 427—341 7 Claims

1. A process for rendering infusible an article of manufacture selected from the group consisting of films, fibers, yarns, ropes and fabrics and having at least a portion of the surface thereof formed of an arylene sulfide polymer, which comprises contacting the surface of said article of manufacture under liquid conditions with a treating agent selected from the group consisting of hydrogen peroxide in acetic acid, alkali earth metal hypochlorites and alkali metal hypochlorites under conditions of concentration of treating agent, time and temperature to render the resulting treated article of manufacture infusible and thereafter separating the resulting infusible article of manufacture from said treating agent.

4,251,576
INORGANIC REINFORCING PHASE DISPERSED AND BONDED TO POLYMER MATRIX

Peter G. Osborn, Bourne End; Desmond W. J. Osmond, Windsor, and Barrie J. Thorpe, Stockport, all of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation of Ser. No. 871,406, Jan. 23, 1978, which is a continuation of Ser. No. 578,863, May 19, 1975, abandoned. This application Feb. 4, 1980, Ser. No. 118,326
Claims priority, application United Kingdom, May 29, 1974, 23751/74; Fed. Rep. of Germany, Oct. 18, 1974, 2449656
Int. Cl.[3] B32B 5/16, 15/08
U.S. Cl. 428—331 11 Claims

1. A shaped and cured multi-component composite comprising an organic polymer matrix and a particulate inorganic reinforcing phase dispersed therein and bonded thereto, said composite being obtained by shaping and curing a stable, fluid mouldable and curable fluid composition comprising

(A) an organic liquid which is polymerisable to form a solid polymer and has a viscosity not greater than 50 poise at the temperature at which the composition is to be moulded,

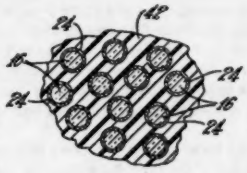
(B) finely divided particles of one or more inorganic fillers having a maximum size of 100 microns, at least 95% by number of the particles being of a size 10 microns or less, and the surface area of the particles being from 20 m^2/cc to 1 m^2 cc, the said particles constituting from 35 to 85% by volume of the total composition, and (C) a polymeric dispersant containing at least one component of molecular weight at least 500 which is solvated by the polymerisable organic liquid (A), and containing one or more groupings which are capable of associating with, and effecting anchoring to, the particles of the inorganic filler (B) whereby the filler particles are maintained in a state of stably deflocculated dispersion in the polymerisable liquid.

11. A laminate comprising a composite according to claim 1 bonded to an acrylic sheet.

4,251,577
ASPHALT-COATED GLASS FIBERS

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jul. 9, 1979, Ser. No. 55,738
Int. Cl.[3] B32B 11/00; D02G 3/00
U.S. Cl. 428—378 16 Claims



1. Glass fibers having a coating thereon, said coating consisting essentially of the reaction product of (a) a bitumen and (b) a chromic complex containing a carboxylato group containing a functional group relative with the bitumen.

11. Natural or synthetic fibers having a coating thereon, said coating consisting essentially of the reaction product of (a) a bitumen and (b) a chromic complex containing a carboxylato group containing a functional group relative with the bitumen.

4,251,578
ROOF COATING COMPOSITION AND CONSTRUCTION

John H. Kaufmann, Somerset Parish, Bermuda, assignor to Global Coatings Limited, Hamilton, Bermuda

Division of Ser. No. 795,888, May 11, 1977, Pat. No. 4,160,346. This application Jun. 20, 1979, Ser. No. 50,435
Claims priority, application United Kingdom, May 11, 1976, 19410/76
Int. Cl.[3] E04D 1/20
U.S. Cl. 428—53 3 Claims

1. A roofing shingle, comprising,

an elongated integral wedge-shaped body of closed cell synthetic plastic foam of density from about 1 to about 3 lbs per cubic foot having a substantially rectangular planar upper surface, a substantially rectangular planar under surface, opposed substantially triangular planar side surfaces and leading and trailing rectangular planar end surfaces, said body tapering from a major thickness adjacent

the leading end to a minor thickness adjacent the trailing end which constitutes a tongue,

said body having each side shaped to interfit with a complementary side of an adjacent shingle,

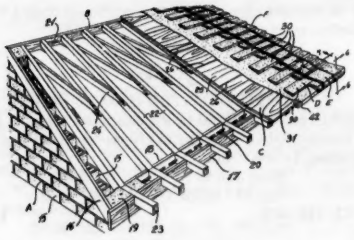
the leading end being shaped to interfit with the trailing end of an adjacent trailing shingle,

the undersurface being adapted to lie flat on a planar roof deck as a continuation of the undersurfaces of companion shingles at each side and at its trailing and leading ends,

the body being provided with a side recess extending inward from and along the entire edge of one side surface and extending upward from and along the adjacent part of the edge of the undersurface,

the body being provided with an end recess extend-inward from and along a major portion of the edge of the leading surface and upward from and along the edge of the undersurface,

the body being provided, at the other side with a flange



extending outward from and along a major portion of the edge of the other side face and upward from and along a major portion of the edge of the undersurface, said flange having an end face forming a continuation of a face of the end recess at one end and at the other end having a part including a continuation of the top, bottom and trailing end faces,

the side recess being shaped to receive in a mating relationship, a flange of the type defined on the side of a similar flanking shingle and said flange being shaped to receive the side recess of a flanking shingle with the side surfaces of the respective shingles abutting whereby each side surface abuts that of an adjacent shingle and the upper and undersurfaces of the shingle and its flanking shingles form a substantially continuous planar surface,

the end recess being adapted to receive the tongue of a similar shingle whereby the leading end surface is adapted to form a substantially unbroken surface continuing at an abrupt angle to the upper surface of the trailing shingle.

4,251,579

FIRE PROTECTION MEANS

Eric C. Lee, Saffron Walden; Peter H. Lynam, Linton; Laurence J. A. Theobald, North Wembley, and Harold W. Wyeth, Fleet, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 30, 1978, Ser. No. 910,555

Claims priority, application United Kingdom, Jun. 3, 1977, 23580/77

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—73 **17 Claims**

1. In a fire protection means comprising a panel having a honeycomb core, having in cells thereof a fire-extinguishing fluid, and facing sheets bonded to each face of the core, the improvement enabling the fire-extinguishing fluid to be liberated in a desired direction upon actuation of the means by impact of a projectile and comprising the panel being so ar-

ranged that said honeycomb core is more rigidly enclosed on one face thereof than on the other.

4,251,580

PILE SURFACED FRICTION DEVICE

Arthur C. Angood, Walldorf; Rodney E. Ginger, Oestringen, both of Fed. Rep. of Germany, and Graham Jarrett, Hitchin, England, assignors to Imperial Chemical Industries Limited, London, England

Filed Jul. 15, 1976, Ser. No. 705,558

Claims priority, application United Kingdom, Jun. 3, 1976, 22951/76

Int. Cl.³ B29C *17/02*

U.S. Cl. 428—92 **5 Claims**

1. A mat having piles on both outer surfaces, said piles being provided by laminar pile-surfaced material, at least one of which being a pile having improved resistance to slide and being fabricated from thermoplastic polyurethane, said laminar pile-surfaced material having a pile fabricated from thermoplastic material by feeding thermoplastic material and a backing to a heated surface so that the thermoplastic material softens and bonds to the backing as well as to the heated surface and then peeling the combination of thermoplastic material and the backing away from the heated surface thereby drawing the softened thermoplastic material in to fibres or fibrils to form a pile on the backing and cooling the fibres or fibrils as they are so formed.

4,251,581

MOLDABLE NON-WOVEN STRUCTURED TEXTILE SHEETS COMPRISING CO-POLYMERIC IMPREGNANT CONSISTING ESSENTIALLY OF 75-95% BY WEIGHT OF A THERMOPLASTIC COMPONENT AND 25-5% BY WEIGHT OF A PLASTICIZING COMPONENT

Claus Schoppa, Marl-Polsum; Wilhelm Fortmann, Schermbeck, and Armin Stei, Dorsten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huels A.G., Marl, Fed. Rep. of Germany

Filed Oct. 21, 1977, Ser. No. 844,416

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1976, 2647522

Int. Cl.³ B32B *27/04, 27/12, 27/30*

U.S. Cl. 428—95 **10 Claims**

1. A structured, permanently moldable textile sheet which is prepared by a process consisting essentially of (a) impregnating only the back of a textile sheet with an aqueous dispersion of a synthetic resin, while avoiding complete impregnation of the textile sheet, consisting essentially of 75–95% by weight of a thermoplastic component and 5–25% by weight of a plasticizing component; and (b) drying the impregnated sheet.

7. A molded, structured textile sheet which is prepared by directly molding the impregnated and dried moldable textile sheet of claim 1.

8. The molded sheet of claim 7 which is shaped as an automobile mat.

4,251,582

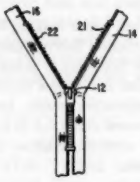
DYEABLE AND DYED POLYMER-COATED ARTICLES

Lornie J. Bernier, Guys Mills, and Tapan K. Das, Meadville, both of Pa., assignors to Textron Inc., Providence, R.I.

Division of Ser. No. 659,582, Feb. 19, 1976, Pat. No. 4,172,702, which is a continuation-in-part of Ser. No. 501,371, Aug. 28, 1974, Pat. No. 3,939,547. This application May 15, 1979, Ser. No. 39,242

Int. Cl.[3] B21D *53/50;* B29D *5/00;* D06P *5/00;* B05D *1/06*

U.S. Cl. 428—99 41 Claims



1. An article of manufacture comprising

a metal member;

a dyeable polymer coating on the member;

said polymer coating including a quantity of active proton acceptor groups at least equal to 0.5 times the quantity of polymer molecules in the polymer coating to provide for dye pick-up in the polymer coating;

said active proton acceptor groups being subject to irreversible transformation by heating above a predetermined temperature;

said polymer coating being a coherent polymer film formed from a powdered polymer resin including said active proton acceptor groups and which is heated sufficiently to coalesce the powdered resin and form the coherent polymer film, but heated below the predetermined temperature to maintain a substantial quantity of active proton acceptor groups untransformed; and

a dye in the polymer coating.

4,251,583

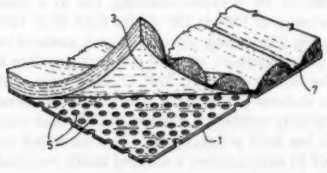
HUMIDIFIER PAD

James P. Donachiue, 133 Richmond Street West, Toronto, Ontario, Canada (M5H 2L7)

Filed Feb. 5, 1979, Ser. No. 9,744

Int. Cl.[3] B32B *3/10, 5/14, 27/14*

U.S. Cl. 428—137 12 Claims



1. A humidifier pad provided with liquid flow inhibiting junctures for inhibiting the flow of liquid along the pad, said humidifier pad comprising a resilient plastic reinforcing layer and a fibrous layer being secured to the reinforcing layer by heat seals extending across the entire width of the pad and forming said junctures which are spaced along the length of the humidifier pad; the reinforcing layer being perforated to permit the passage of air therethrough to the fibrous layer, the fibrous material in the junctures being compressed and of increased density relative to the fibrous material between the junctures as a result of the heat sealing and being of sufficiently high density to substantially eliminate the flow of picked up water across each zone.

4,251,584

FOAMED POLYOLEFIN FILM OR SHEET PRODUCT

Gerardus van Engelen, Weert; Tom van Utteren, Maarheeze, and Hubertus Vonken, Weert, all of Netherlands, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 26, 1978, Ser. No. 954,761

Claims priority, application United Kingdom, Oct. 31, 1977, 45175/77

Int. Cl.[3] B32B *3/30*

U.S. Cl. 428—159 22 Claims

1. A wall or ceiling covering, comprising a layer having a thickness of from about 0.2 to 1 mm of a closed cell foamed thermoplastic synthetic resin, said layer having a low bulk density between about 30 and 400 kg/m^3, a uniform, smooth and abrasion resistant surface which is readily printable and fine cell structure having an average cell diameter of between about 0.05 and 1 mm, said thermoplastic synthetic resin consisting essentially of a mixture of a low density polyethylene and a copolymer of ethylene and a comonomer containing polar groups, said comonomer being selected from the group consisting of an unsaturated carboxylic acid, a lower alkyl ester of an unsaturated carboxylic acid, a vinyl ester of a carboxylic acid and a vinyl halide, said mixture containing from about 0.1 to 0.7 percent by weight of said polar grops; and an amount between about 1 and 40 percent by weight of a filler sufficient to render the wall or ceiling covering opaque.

4,251,585

PRODUCT AND PROCESS FOR STRETCHING A TUBULARLY FORMED SHEET OF ORIENTABLE THERMOPLASTIC MATERIAL

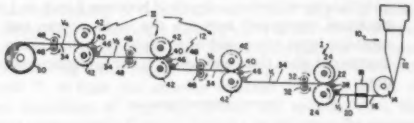
Eckhard C. A. Schwarz, Neenah, Wis., assignor to Biax Fiberfilm Corporation, Neenah, Wis.

Continuation-in-part of Ser. No. 563,623, Mar. 31, 1975, abandoned, and a continuation-in-part of Ser. No. 614,018, Sep. 17, 1975, Pat. No. 4,116,892, Division of Ser. No. 766,926, Feb. 9, 1977, Pat. No. 4,144,008. This application May 1, 1978, Ser. No. 901,523

The portion of the term of this patent subsequent to Sep. 26, 1995, has been disclaimed.

Int. Cl.[3] B32B *1/08, 31/02;* B29D *7/24, 23/04*

U.S. Cl. 428—188 9 Claims



6. A process for manufacturing tubularly-shaped thermoplastic products of improved strip tensile breaking strength from an orientable thermoplastic material, which comprises:

(a) forming said thermoplastic material into a tubularly-shaped film;

(b) forming said tubularly-shaped film into a sheet;

(c) heat sealing said sheet at preselect intervals substantially perpendicularly to the movement of said sheet;

(d) introducing said sheet of step c) into a nip of interdigitating rollers having grooves substantially parallel to the axis of said rollers;

(e) controlling the velocity of introduction of said sheet into said nip to assume and maintain the velocity substantially identical to the surface velocity of said rollers to prevent slipping of said film and thereby longitudinally stretch

incremental portions of said sheet by a deflection of said sheet into the shape of said grooves:

(f) withdrawing said sheet from said rollers at a velocity greater than the rotational velocity of said rollers;

(g) introducing said longitudinally stretched sheet into a nip of interdigitating rollers having grooves substantially perpendicular to the axis of said rollers;

(h) controlling the velocity of introduction of said sheet into said nip to assume and maintain the velocity substantially identical to the surface velocity of said rollers to prevent narrowing of said film prior to introduction thereby to laterally stretch incremental portions of said sheet by deflection of said sheet into the shape of said grooves;

(i) laterally elongating and withdrawing said sheet from said rollers at a velocity substantially corresponding to the velocity of introduction; and

(j) collecting the bi-axially stretched sheet.

4,251,586

ROAD PAVEMENT AND REPAIR

Alfred Marzocchi; Michael G. Roberts, and Charles E. Bolen, all of Newark, Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 778,415, Mar. 17, 1977, Pat. No. 4,175,978. This application Sep. 10, 1979, Ser. No. 74,377

Int. Cl.³ B32B *7/02, 11/02*

U.S. Cl. 428—220 **8 Claims**

1. In a pavement construction including an upper wear course layer and an underlying substrate layer, the improvement comprising an intermediate membrane layer disposed between said wear course and substrate layers, said membrane being approximately ⅛ to ½ inch thick and composed of organic bituminous matrix and intermixed particles of glass flake in the range of 10 to 50% of bituminous matrix.

5. A pavement comprising:

a wear course containing 88–95% sand and stone aggregate and 5–12% modified asphalt composed of the reaction product of 60.0 to 99.8% asphalt, 0.1 to 35% styrene monomer, and from 0.1 to 5.0% butadiene rubber;

an underlying substrate layer serving as a base for the pavement; and

an interface layer having a depth of between ¼ inch to ½ inch thickness interposed between the wear course and the substrate layer composed of an asphaltic composition and intermixed glass flake embedded in the asphaltic composition.

4,251,587

SHEET MATERIAL AND METHOD OF PRODUCING THE SAME

Koji Mimura; Toru Takemura, and Yoshikazu Fujinaga, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Jun. 23, 1978, Ser. No. 918,427

Claims priority, application Japan, Jun. 29, 1977, 52/77597

Int. Cl.³ B32B *5/02*

U.S. Cl. 428—233 **30 Claims**

1. A method of producing sheet materials, comprising:

laminating a web material of a short fiber material consisting at least partly of a natural fiber material on a base cloth formed of fibers having a latent shrinkability;

subjecting said laminate to high pressure liquid jet streams on said web material surface so that said base cloth and web material are substantially integrated with each other; and then shrinking the obtained sheet.

4,251,588

HOLLOW MONOFILAMENTS IN PAPER-MAKING BELTS

Gerald B. Goetemann, and Robert L. Rackley, both of Parkersburg, W. Va., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 26, 1979, Ser. No. 106,400

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—224 **8 Claims**

1. In a woven, heat set, paper-making belt of machine direction and transverse direction thermoplastic filaments, the improvement wherein the filaments in at least one of the machine and transverse directions are hollow monofilaments of polyester, polyamide or polycarbonamide, having a diameter of about 6 to 32 mils, oriented about 3.4 to 6.0 times their original length, having a void content of about from 3–15 percent of their cross-sectional area.

4,251,589

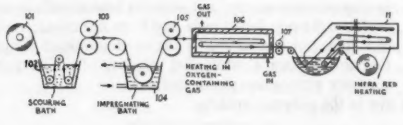
PRODUCTION OF A SUBSTANTIALLY INERT FLEXIBLE TEXTILE MATERIAL

Charles Romaniec, Woodville Flat, Woodville House, Lurgan, Craigavon, Northern Ireland

Continuation of Ser. No. 967,092, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 830,748, Aug. 29, 1977, abandoned. This application Sep. 5, 1979, Ser. No. 72,602

Int. Cl.³ B32B *23/02, 27/02;* **D03D** *25/00;* **D06B** *19/00*

U.S. Cl. 428—263 **10 Claims**



1. A process for the production of a partially carbonised inert fibrous flexible textile material which comprises the steps of (i) impregnating a scoured textile material formed from a blend of a fibrous acrylonitrile polymer and a fibrous regenerated cellulosic material with an aqueous solution of salts selected from the group consisting of (a) ammonium halides and lower copper alkanoates and (b) ammonium phosphates and alkali metal bichromates, (ii) heating the impregnated material in a stream of an oxygen-containing gas to a temperature within the range of 150° to 250° C. for from 80 to 120 minutes and thereafter (iii) heating the thus treated material in a flowing inert gas atmosphere so as to produce a surface temperature on the fibres of 275° to 325° C. for a time sufficient to render the surfaces of the fibres substantially uniformly inert.

10. A partially carbonised, fibrous, flexible inert textile material which has been produced by a process which comprises the steps of (i) impregnating a scoured textile material formed from a blend of a fibrous acrylonitrile polymer and a fibrous regenerated cellulosic material with an aqueous solution of salts selected from the group consisting of (a) ammonium halides and lower copper alkanoates and (b) ammonium phosphates and alkali metal bichromates, (ii) heating the impregnated material in a stream of an oxygen-containing gas to a temperature within the range of 150° to 250° C. for from 80 to 120 minutes and thereafter (iii) heating the thus treated material in a flowing inert gas atmosphere so as to produce a surface temperature on the fibres of 275° to 325° C. for a time sufficient to render the surfaces of the fibres substantially uniformly inert.

4,251,590
HIGH TEMPERATURE PIPE INSULATION

Kent A. Rubright, Jefferson County; William C. Magill; Spencer I. Meier, both of Arapahoe County, all of Colo., and Romain E. Loeffler, deceased, late of Jefferson County, Colo. (by Carolyn R. Loeffler, legal representative), assignors to Johns-Manville Corporation, Denver, Colo.

Filed Jun. 18, 1979, Ser. No. 49,517
Int. Cl.³ B32B 15/00
U.S. Cl. 428—285 11 Claims

1. A high temperature pipe insulation comprising a layer of glass fibers having an average density which lies between about 5–7 pounds per cubic foot, said glass fibers being bonded with a binder in an amount which lies between about 2–8% LOI, said binder comprising an antipunking phenolic resin and silane, and wherein the silane content in said binder comprises an amount from about 0.5–5% of the solids content in said phenolic resin.

4,251,591
POLYVINYLBUTYRAL LAMINATES

Henry K. Chi, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Oct. 1, 1979, Ser. No. 80,645
Int. Cl.³ B32B 5/18, 27/08
U.S. Cl. 428—315 16 Claims

1. A laminate comprising:

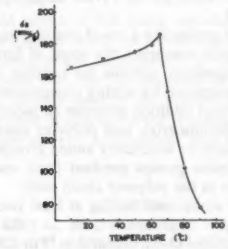
(A) at least one sheet comprising a copolymer formed by polymerizing from 55 to 97 parts by weight of a vinylaromatic monomer with from 45 to 3 parts by weight of an unsaturated dicarboxylic acid anhydride and from 0 to 20 parts by weight of copolymerizable monomer; laminated to

(B) a sheet of polyvinylbutyral.

4,251,592
STABILIZATION TREATMENT OF ACICULAR FERROMAGNETIC IRON OR IRON-ALLOY PARTICLES AGAINST THE OXIDATION THEREOF

Atushi Takedoi; Nanao Horiishi; Goro Matsui, and Koji Toda, all of Hiroshima, Japan, assignors to Toda Kogyo Corp., Hiroshima, Japan

Continuation-in-part of Ser. No. 877,895, Feb. 15, 1978, abandoned. This application Apr. 3, 1979, Ser. No. 26,548
Int. Cl.³ B32B 5/16
U.S. Cl. 428—403 9 Claims



1. A process for stabilizing acicular ferromagnetic iron or iron-alloy particles which consist of iron or an iron alloy against the oxidation thereof, which comprises (a) suspending acicular ferromagnetic iron or iron-alloy particles which may contain Co or Ni in an aqueous alkaline solution having 0.01 to 18-N hydroxyl ion concentration at a temperature of 5 to 70° C. while stirring the suspension in a non-oxidative atmosphere and thereby controlling the dissolution of ferrous iron from the surface of the acicular particles therein, (b) oxidizing the surface of the acicular particles in the resultant suspension by introducing an oxygen containing gas thereinto at a temperature of 60 to 100° C. to form dense and thin magnetite film on the surface of the acicular particles; and (c) drying the resultant particles of air at a temperature below 100° C.

9. Stabilized acicular ferromagnetic iron or iron-alloy particles obtained by the process of claim 1 having an average particle-size below 1μ.

4,251,593
HEAT-SENSITIVE RECORDING SHEET

Hiroshi Sakamoto, Handa; Minoru Nomura, and Minoru Hagiri, both of Shizuoka, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jul. 20, 1979, Ser. No. 59,299
Claims priority, application Japan, Aug. 1, 1978, 53-93951
Int. Cl.³ B41M 5/18; B32B 9/06
U.S. Cl. 428—411 10 Claims

1. A heat-sensitive recording sheet, which comprises a support and a heat-sensitive layer formed thereon, said support being selected from the group consisting of paper, synthetic paper, synthetic resin film and metal-laminated paper, said heat-sensitive layer being coated on said support in an amount in the range of 4 to 10 g/m², calculated as the solids, said heat-sensitive layer consisting essentially of A. a color-developable substance which is normally colorless or light-colored, B. an organic acid substance which is capable of making said color-developable substance A develop a color when heated, characterized in that said heat-sensitive layer contains C. at least one member selected from the group of waxes consisting of condensate of higher fatty acid amide and formaldehyde having a melting point in the range of from 80° to 150° C. and condensate of higher fatty acid and ethylene diamine having a melting point in the range of from 80° to 150° C., and D. at least one member selected from the group of waxes consisting of vegetable waxes and montan wax, the amount of ingredient C being from 0.1 to 5.0 times the amount of ingredient A and the amount of ingredient D being from 0.2 to 6.0 times the amount of ingredient A, said heat-sensitive layer having a Beck's smoothness of from 100 seconds to 1,800 seconds.

2. A heat-sensitive recording sheet, which comprises a support and a heat-sensitive layer formed thereon, said support being selected from the group consisting of paper, synthetic paper, synthetic resin film and metal-laminated paper, said heat-sensitive layer being coated on said support in an amount in the range of 4 to 10 g/m², calculated as the solids, said heat-sensitive layer consisting essentially of A. a color-developable substance which is normally colorless or light-colored, B. an organic acid substance which is capable of making said color-developable substance A develop a color when heated and F. a binder, characterized in that said heat-sensitive layer contains C. at least one member selected from the group of waxes consisting of condensate of higher fatty acid amide and formaldehyde having a melting point in the range of from 80° to 150° C. and condensate of higher fatty acid and ethylene diamine having a melting point in the range of from 80° to 150° C., and D. at least one member selected from the group of waxes consisting of vegetable waxes and montan wax, the amount of ingredient C being from 0.1 to 5.0 times the amount of ingredient A and the amount of ingredient D being from 0.2 to 6.0 times the amount of ingredient A, and said binder F comprises a mixture of at least one member selected from the group consisting of starch and oxidized starch, mixed with dialdehyde starch, said binder having been applied in the form of an aqueous solution thereof, said heat-sensitive layer have a Beck's smoothness of from 100 seconds to 1,800 seconds.

9. A heat-sensitive recording sheet, which comprises: a support selected from the group consisting of paper, synthetic paper, synthetic resin film and metal-laminated paper; a heat-sensitive layer coated on said support in an amount in the range of from 4 to 10 g/m², calculated as the solids, said heat-sensitive layer consisting essentially of a mixture of

A. a color-developable substance which is normally colorless or light-colored,

B. an organic acid substance which is effective to make said

color-developable substance A develop a color upon heating,

C. at least one wax having a melting point in the range of from 80° to 150° C. and selected from the group consisting of

(1) condensate of higher fatty acid amide and formaldehyde, and

(2) condensate of higher fatty acid and ethylene diamine,

D. at least one wax selected from the group consisting of carnauba wax, sugarcane wax, cotton wax and montan wax,

E. at least one inorganic filler selected from the group consisting of clay, calcium carbonate, magnesium carbonate and kaolin, and

F. a binder, wherein the weight ratio of C/A is 0.1/1.0 to 5.0/1.0, the weight ratio of D/A is 0.2/1.0 to 6.0/1.0, the weight ratio of E/A is 0.5/1.0 to 5.0/1.0, and the amount of F is from 10 to 50% by weight, based on the weight of said heat-sensitive layer, said heat-sensitive layer having a Beck's smoothness of from 100 seconds to 1,800 seconds.

4,251,594

PROCESS FOR PREPARING RESIN IMPREGNATED SUBSTRATES FOR USE IN PREPARING ELECTRICAL LAMINATES

William Davis, Lake Jackson, and Ross C. Whiteside, Jr., Angleton, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 27, 1979, Ser. No. 79,282

Int. Cl.³ B32B *27/38*

U.S. Cl. 428—413 **6 Claims**

1. In a process for preparing resin impregnated substrates for use in preparing electrical laminates which process comprises:

(I) saturating said substrate with a resin forming mixture comprising;

(A) an epoxy resin having an epoxide equivalent weight of from about 300 to about 600, which has been prepared by reacting

(1) a glycidyl ether of a dihydric phenol having an average of more than one epoxide group per molecule and an epoxide equivalent weight (EEW) of from about 156 to about 400, with

(2) a dihydric phenolic compound in the presence of

(3) a catalyst for effecting the reaction between 1 and 2;

(B) a curing agent for said epoxy resin and

(C) a solvent system for Components A and B;

(II) heating the resultant impregnated substrate to B-stage the resin and remove the solvent system; the improvement which comprises:

(a) employing as the catalyst, Component (A-3), an alkali metal hydroxide and

(b) employing as the glycidyl ether of a dihydric phenol, Component (A-1), one which has an aliphatic halide content of at least about 500 ppm.

4,251,595

LOW TEMPERATURE SEALING GLASSES

Maurice E. Dumesnil, Palo Alto, and Ulrich Schreier, San Francisco, both of Calif., assignors to Technology Glass Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 901,467, May 1, 1978, Pat. No. 4,186,023. This application Sep. 10, 1979, Ser. No. 74,012

Int. Cl.³ B32B *17/06, 15/04;* C03C *3/10*

U.S. Cl. 428—426 **7 Claims**

1. A sealing glass composition which does not devitrify when exposed to a temperature of 430° C. for a period of 15 minutes, consisting essentially of a mixture of (a) a finely divided base glass which is a homogeneous mixture containing about 75–85 wt.% lead oxide, about 8–15 wt.% boron oxide, 0 to 10 wt.% zinc oxide, 0.75% to 2.5% silicon dioxide, 0 to 5 wt.% bismuth oxide, 0.5 to 5.5 wt.% cuprous oxide, 0.1 to 3 wt.% alumina and a non-volatile metal fluoride in amount such that the mol ratio of cuprous oxide to the fluoride content of the metal fluoride is in the range 1.0:0.25 to 1:10 and (b) finely divided tetragonal lead titanate, the lead titanate constituting from 10 to 50% by volume of the mixture.

4,251,596

PRODUCTION OF NON-STICK COATINGS

Armand de Montigny, and Hans Toepsch, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 6, 1978, Ser. No. 948,935

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1977, 2748406

Int. Cl.³ B32B *9/04*

U.S. Cl. 428—447 **5 Claims**

1. In the production of a thin substrate having a reduced tendency to adhere by applying to the substrate a solvent-containing mixture comprising (A) 100 parts by weight of an α, ω-dihydroxypolydimethylsiloxane having a viscosity between 10^5 and 5. 10^7 cP at 20° C., (B) about 1 to 20 parts by weight of a polyorganosiloxane which is terminally blocked with trimethylsiloxy groups, contains Si-bonded hydrogen and has about 10 to 40 $CH_3Si(H)O$ units, and (C) about 1 to 20 parts by weight of a heavy metal carboxylate or dialkyl-tin carboxylate, and then heating the substrate to harden the coating, the improvement which comprises including in the mixture applied to the substrate (D) about 0.5 to 10 parts by weight of a disilamorpholinesiloxane which is obtained by reacting a chloromethylpolymethylsiloxane of the formula

$$\begin{matrix} ClCH_2(CH_3)_2SiO[Si(CH_3)CH_2Cl\ O]_n \\ Si(CH_3)_2CH_2Cl \end{matrix}$$

in which n denotes a value between 2 and 200, with at most an equivalent amount of a primary C_{4-18} alkyl or alkenyl or cycloalkylamine in the presence of a proton acceptor.

5. Coated paper produced according to claim 1.

4,251,597

COATING, IMPREGNATING AND ADHESIVE COMPOSITIONS CURABLE AT AMBIENT TEMPERATURE, AND METHODS OF USING THEM

William D. Emmons, Huntingdon Valley, and Wayne E. Feely, Rydal, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 865,568, Dec. 29, 1977, abandoned. This application Dec. 1, 1978, Ser. No. 965,673

Int. Cl.³ C08L *33/10, 79/08;* B32B *27/06*

U.S. Cl. 428—500 **8 Claims**

1. A method for producing a cured coating, impregnating or bonding film, which comprises the steps of forming a liquid film-forming composition, suitable for coating, impregnating, and/or bonding purposes, by mixing components:

(1) A soluble vinyl addition polymer of monoethylenically unsaturated monomer(s), said polymer containing a plurality of primary or secondary amine groups and/or aldimine or ketimine groups pendant from spaced mers or polymer units in the polymer chain with

(2) at least one compound having at least two acryloxy or methacryloxy groups of the formula $H_2C{=}C(R)C(O){-}O{-}$ wherein R is H or CH_3, optionally with a monoethylenically unsaturated monomer of the general formula $H_2C{=}C(R){-}X$ wherein R is H or CH_3 and X is an electron-withdrawing group, and

(3) When component (1) is a polymer containing only primary and or secondary amine groups, with a volatile C_3-C_{10} aldehyde or C_3-C_{10} ketone stabilizer which retards the reaction of (1) and (2) under ambient conditions, the relative amount of the poly(meth)acryloxy component (2) to component (1), based respectively on (meth)acryloxy unsaturation equivalency of (2) and amine (primary and/or secondary) nitrogen equivalency of (1); being such as to provide at least from 0.5 to 3.5 equivalents of (2) for each equivalent of (1) taking into consideration

any reduction of the latter by the monoethylenically unsaturated monomer, if any, present in (2), and then applying the mixture to at least one surface of at least one substrate at ambient conditions to deposit a film coating the surface of the substrate and/or impregnating any pores or interstitial openings extending into the substrate, and then curing the film by exposure to ambient temperature for a period of at least two hours.

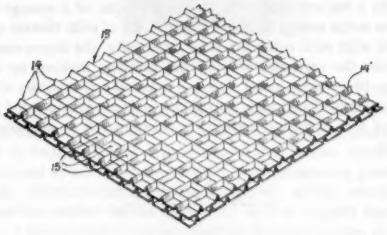
5. A cured coating, impregnating or bonding film obtained by the process of claim 1.

4,251,598

REFLECTIVE INSULATIVE PANEL

William Waite, Chicago, Ill., assignor to Transco, Inc., Chicago, Ill.

Filed Sep. 11, 1978, Ser. No. 941,022
Int. Cl.³ B21D *13/00*; E04C *2/04*; B32B *3/28*
U.S. Cl. 428—603 **1 Claim**



1. A heat insulative and reflective prefabricated panel comprising:

(a) a metallic facing sheet and a metallic backing sheet extending substantially in spaced parallel relation,

(b) layers of foil encapsulated between said facing and said backing sheets,

(c) each layer of foil being preformed to provide rectangularly spaced cells,

(d) each of said cells defined by a rib substantially triangular in close section and extending at right angles to each other so as to provide a raised apex defining each of said rectangular cells, and

(e) with said layers of foil being superimposed upon one another with said ribs of each cell in each layer disposed offset vertically and horizontally to form a pattern of cellular units with the cellular units of one layer closed from the cellular units of the superimposed layer, with only said apex of said one layer in contact with the juxtaposed other layer so as to restrict heat transfer between.

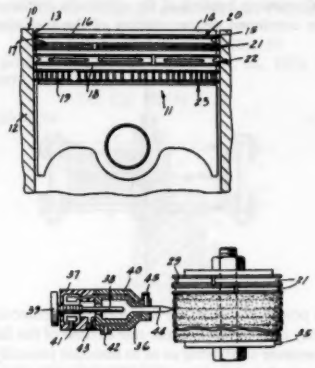
4,251,599

FERROUS METAL BODY COATED WITH AN ALLOY FORMED BY AN IRON/SILICON EXTENDED MOLYBDENUM PLASMA SPRAY POWDER

Harold McCormick, Ballwin, Mo., assignor to Ramsey Corporation, St. Louis, Mo.

Continuation of Ser. No. 879,477, Feb. 21, 1978, abandoned. This application Aug. 23, 1979, Ser. No. 69,250
Int. Cl.³ B22F *5/02*; B05B *7/20*
U.S. Cl. 428—682 **3 Claims**

1. A piston ring having a ferrous metal body and a coating forming the bearing surface thereof which coating is a plasma jet sprayed alloy formed from a plasma spray feed powder mixture consisting essentially of molybdenum, iron and silicon, the weight ratio of iron to molybdenum in said powder being in the range of from 9:1 to 3.2:1, said iron and molybdenum constituting from 90% to 99% by weight of said powder, and the silicon being present in the range of from about 0.4% to



6.0% by weight of said powder, said powder having a particle size such that at least 95% passes through a 170 mesh screen.

4,251,600

METHOD OF PREPARING A SINTERED LITHIUM ALUMINATE STRUCTURE FOR CONTAINING ELECTROLYTE

James W. Sim, Evergreen Park, Ill., and Kimio Kinoshita, Cupertino, Calif., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Dec. 27, 1979, Ser. No. 107,760
Int. Cl.³ H01M *8/14*; B28B *1/26*
U.S. Cl. 429—12 **9 Claims**

1. A method of preparing a porous structure for retaining molten electrolyte within an electrochemical cell comprising:

preparing a reaction mixture containing oxidized aluminum as alumina or aluminum hydroxide slurry with a solution of lithium hydroxide to react with said oxidized aluminum and form lithium aluminate;

reducing said mixture to dryness;

calcining said dried mixture to form a dehydrated powder containing beta lithium aluminate;

compacting said powder containing beta lithium aluminate to form a porous green compact; and

sintering said compact at a temperature in excess of 1200 K but less than the melting point of lithium aluminate simultaneously to form a porous integral structure and to convert said beta lithium aluminate to gamma lithium aluminate.

4,251,601

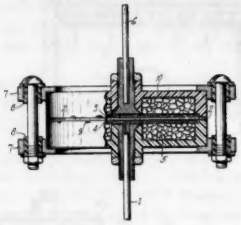
FUEL-DISSOCIATION ELECTRICAL CURRENT GENERATING APPARATUS AND METHOD

Sid Russell, Suffield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 18, 1978, Ser. No. 970,780
Int. Cl.² H01M *8/04*
U.S. Cl. 429—17 **27 Claims**

1. Apparatus particularly adapted for hydrazine based fuel dissociation or decomposition type electrical current generation comprising an enclosed chamber containing a porous membrane separating at least two fluid permeable electrodes of dissimilar metal, fuel decomposition catalyst in contact with at least one of said electrodes on that side of the electrode opposite the porous membrane, at least one fuel source inlet to said porous membrane and at least one dissociation product outlet from said porous membrane.

12. A method of generating electrical current comprising catalytically inducing decomposition of an ionically conductive hydrazine based fuel between electrode surfaces of dissimilar metals causing heating of the electrode surfaces sufficient to sustain continued decomposition of the fuel, thereby producing a potential difference between the electrode surfaces and a steady flow of current, the rate of flow of the fuel and the internal pressure controlled so as to maintain ionically conductive hydrazine based fuel in a liquid state between the electrode surfaces for ionic transport.

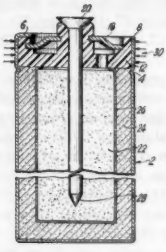


4,251,602

HIGH PRESSURE SAFETY VENT FOR GALVANIC DRY CELLS

Theodore R. Beatty, Bay Village, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Mar. 14, 1980, Ser. No. 130,263
Int. Cl.³ H01M *2/12*
U.S. Cl. 429—54 **9 Claims**



1. In a cylindrical galvanic cell comprising a container having an open end and an inner disposed active anode, an active cathode, and an electrolyte disposed within said container; a closure means for the container, said closure means comprising an annular rigid cover disposed within a first annular di-electric gasket having a U-shaped type cross section with the center of the di-electric gasket defining an opening;

a current collector disposed through the central opening in the first di-electric gasket and contacting an active member of the cell; the container having a segment of its upper wall radially compressed against said cover via said first di-electric gasket providing a seal thereat;

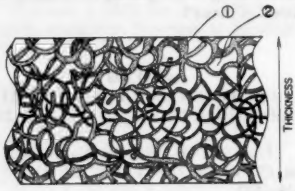
the improvement wherein a first arc portion between about 150° and 200° of the top peripheral edge of the container defining the open end is curled over the first di-electric gasket thereby axially securing the closure means at said first arc portion within the container; and wherein at least one vent opening is disposed in the first di-electric gasket below the cover to enable the cover to tip upwardly at the remaining second arc portion of the top of the container after internal gas has reached a predetermined pressure level thereby venting gas between the cover and the first gasket.

4,251,603

BATTERY ELECTRODE

Isao Matsumoto, Osaka; Tsutomu Iwaki, Yawata, and Nobuyuki Yanagihara, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 13, 1980, Ser. No. 121,232
Int. Cl.³ H01M *4/80*
U.S. Cl. 429—94 **7 Claims**



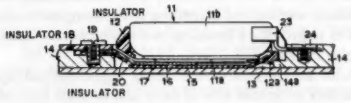
1. In a battery electrode having a plaque of a sponge-like porous metal matrix having a multiplicity of cells therein connected with each other three-dimensionally, the improvement wherein the sectional area of the gratings making up said sponge-like porous metal plaque is reduced continuously along the thickness of said plaque from the surface to the central part thereof and an active material is impregnated in said porous plaque.

4,251,604

BATTERY ASSEMBLY FOR ELECTRONIC TIMEPIECES

Toshio Umemoto, Koganei, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed Apr. 30, 1979, Ser. No. 34,501
Claims priority, application Japan, May 4, 1978, 53/53348
Int. Cl.³ H01M *2/10*
U.S. Cl. 429—98 **8 Claims**



1. A battery assembly for electronic timepieces comprising:

a battery having a positive terminal with a cylindrical surface and a negative terminal with a top surface disposed in a plane perpendicular to the axis of the positive terminal;

(b) means for simultaneously positioning said assembly and for providing electrical connection to said battery, comprising:

(1) a supporting frame having a central bore through which the battery is inserted in such a manner to be securely fitted to the frame;

(2) a lead plate having an end securely fitted and electrically connected to the negative terminal of the battery; and

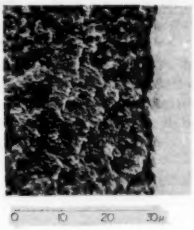
(3) an insulating member supported by the frame and disposed to cover the negative terminal and the lead plate;

(4) the supporting frame being provided with an engaging portion which is engaged with a stop of a substrate of the timepiece for preventing a dial plate of the timepiece from being depressed by the battery through the insulating member.

4,251,605
DRIED POROUS ACRYLONITRILE POLYMER MEMBRANE, PROCESS FOR PRODUCING SAME AND SEPARATORS MADE THEREFROM

Akio Inoue; Tadahiro Kobayashi, and Toshio Iwasa, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 831,017, Sep. 6, 1977. This application May 9, 1979, Ser. No. 37,545
Claims priority, application Japan, Sep. 8, 1976, 51/106613
Int. Cl.³ H01M 2/14
U.S. Cl. 429—145 5 Claims

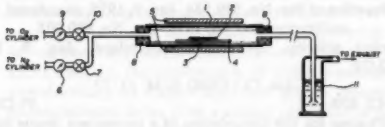


1. Separators placed between the alternating positive and negative plates in the cells of a lead storage battery, characterized by each separator comprising a dried porous membrane composed of acrylonitrile polymer walls separating predominantly interconnecting small-size pores, which membrane comprises surface layers integrated with a support layer to form a single continuous acrylonitrile polymer phase, at least one of the surface layers having pores of from 0.001 to 0.05 micron in average size, the support layer having pores of a larger average size than the pores in the surface layer or layers, and said membrane having a porosity of from 20% to 70% by volume and a fragility of below 30.

4,251,606
BATTERY

Rudolph R. Haering, 647 Croydon Pl., Vancouver, British Columbia; James A. R. Stiles, 4133 Fairway Pl., North Vancouver, British Columbia, and Klaus Brandt, #318 - 1741 W. 10th Ave., Vancouver, British Columbia, all of Canada

Continuation-in-part of Ser. No. 33,718, Apr. 26, 1979, which is a continuation-in-part of Ser. No. 935,361, Aug. 21, 1978, abandoned. This application Aug. 30, 1979, Ser. No. 71,402
The portion of the term of this patent subsequent to Jan. 13, 1998, has been disclaimed.
Int. Cl.³ H01M 6/16
U.S. Cl. 429—194 5 Claims

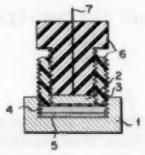


1. A battery cell, comprising:
(a) a lithium anode;
(b) a non-aqueous electrolyte; and,
(c) a cathode having a cathode-active material which comprises molybdenum dioxide.

4,251,607
NONAQUEOUS BATTERY WITH ORGANIC COMPOUND CATHODE

Junichi Yamaki, and Akihiko Yamaji, both of Mito, Japan, assignors to Nippon Telegraph and Telephone Public Corporation, Tokyo, Japan

Filed Jan. 2, 1980, Ser. No. 109,138
Claims priority, application Japan, Jan. 26, 1979, 54-7052; May 14, 1979, 54-58015
Int. Cl.³ H01M 6/14
U.S. Cl. 429—194 14 Claims



1. A battery which comprises:
an anode containing one metal selected from the Group Ia metals;
a cathode containing one compound selected from the group consisting of organic compounds having a phthalocyanine function and organic compounds having a porphin function; and
a nonaqueous electrolyte which does not chemically react with the anode and cathode materials, and permits the migration of the ions of the anode material to the cathode for electrochemical reaction with the cathode-active material.

4,251,608
LEAD-SULFURIC ACID BATTERY WITH STAINLESS STEEL OR TITANIUM GRID

Samuel Ruben, 52 Seacord Rd., New Rochelle, N.Y. 10803

Filed Aug. 21, 1979, Ser. No. 68,454
Int. Cl.³ H01M 4/73
U.S. Cl. 429—205 6 Claims

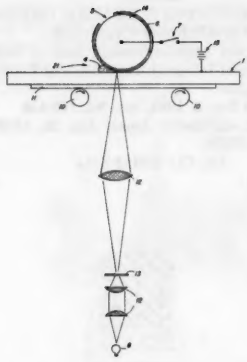
1. A grid support for anodic and cathodic reactants in lead-sulfuric acid electric current producing cells comprising a base of metal selected from the group of metals consisting of stainless steel and titanium, and an impervious conductive sulfuric acidresistant coating intimately bonded to said base, comprising a resin having finely divided conductive particles uniformely dispersed therein.

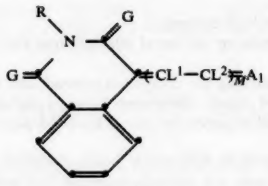
4,251,609
ISOQUINOLINEDIONE PHOTOELECTROPHORETIC MATERIALS FOR IMAGING PROCESSES

James R. Nonnemacher, Rochester; Michael T. Regan, Fairport, and Frank G. Webster, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 909,245, May 24, 1978, Pat. No. 4,165,985.
This application Apr. 9, 1979, Ser. No. 28,309
Int. Cl.³ G03G 5/06, 17/04
U.S. Cl. 430—9 5 Claims

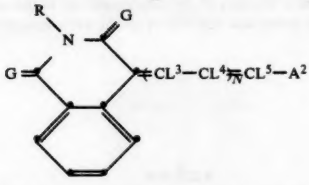
1. An electrophoretic migration image wherein said image comprises a material having the structure:





I.

or



II.

wherein:

R represents a basic heterocyclic nucleus of that defined for A^1 below, or hydrogen, alkyl, aryl, aralkyl, ureido, hydroxy, aniline or amidino;

G represents O or S;

L^1, L^2, L^3, L^4, and L^5, each represent hydrogen, alkyl, or aryl;

M represents zero, one, two or three;

N represents zero or one;

A^1 represents a basic nitrogen substituted heterocyclic nucleus selected from the group consisting of imidazole, 3H-indole, thiazole, benzothiazole, naphthothiazole, thianaphtheno[7,6-d]-thiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, thiazoline, 2-quinoline, 4-quinoline, 1-isoquinoline, benzimidazole, 2-pyridine and 4-pyridine; and

A^2 may represent the same basic heterocyclic nucleus as A^1 and in addition may represent an amino substituted aryl group e.g., 4-aminophenyl or an alkoxy substituted aryl group or A^2 may be for example, a heterocyclic nucleus such as thiophene, benzo[b]thiophene, naphtho[2,3-b]thiophene, furan, isobenzofuran, chromene, pyran, xanthene, pyrrole, 2H-pyrrole, pyrazole, indolizine, indoline, indole, indazole, carbazole, pyrimidine, isothiazole, isoxazole, furazan, chroman, isochroman, 1,2,3,4-tetrahydroquinoline, 4H-pyrrolo[3,2,1-ij]quinoline, 1,2-dihydro-4H-pyrrolo[3,2,1-ij]quinoline; 1,2,5,6-tetrahydro-4H-pyrrolo[3,2,1-ij]quinoline; 1H,5H-benzo[ij]quinolizine; 2,3-dihydro-1H,5H-benzo[ij]quinolizine; 2,3-dihydro-1H,5H-benzo[ij]quinolizine and 2,3,6,7-tetrahydro-1H,5H-benzo[ij]quinolizine, 10,11-dihydro-9H-benzo[a]xanthen-8-yl and 6,7-dihydro-5H-benzo[b]pyran-7-yl.

4,251,610

METHOD OF MAKING MULTICOLOR CRT DISPLAY SCREEN WITH MINIMAL PHOSPHOR CONTAMINATION

Duane A. Haven, Banks, and Donald P. Chitwood, Aloha, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 2, 1979, Ser. No. 90,709

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—25 **10 Claims**

1. A method of manufacturing a display screen for a cathode-ray tube, comprising the steps of:

forming on a transparent support a light-absorbing layer that includes a plurality of light-transmissive openings,

coating the light-absorbing layer with a first continuous layer of a photosensitive material,

exposing portions of said first layer to actinic radiation at locations overlying said light-transmissive openings,

treating said first layer to remove the exposed portions thereof and form a plurality of openings individually aligned with those of said light-absorbing layer,

coating the remaining portions of said first layer with a second continuous layer of a photosensitive material,

passing actinic radiation through said support and light-transmissive openings to expose portions of the second layer defined by the aligned openings, and

treating said second layer to remove the unexposed portions thereof while retaining the exposed portions within said aligned openings.

4,251,611

PROCESS FOR FORMATION OF PERMANENT IMAGE

Wolfgang Mehl; Dieter Hendriks, both of Geneva, and Robert Decombe, Ferney-Voltaire, all of Switzerland, assignors to Sublistatic Holding SA, Glaris, Switzerland

Continuation of Ser. No. 539,934, Jan. 9, 1975, abandoned. This application Feb. 24, 1978, Ser. No. 880,902

Claims priority, application Switzerland, Jan. 9, 1974, 00212/74

Int. Cl.³ G03G *9/14, 13/22*

U.S. Cl. 430—42 **17 Claims**

1. Process for the formulation of a permanent image in one or more colors starting from latent electrostatic images corresponding to the color separations of an original, characterized in that

(a) The latent electrostatic images are developed by the magnetic brush method, by means of a developer consisting of ferromagnetic cores and representing at least 50%

of the weight of the developer particle embedded in a colored resin, devoid of wax, containing more than 10% of at least one dyestuff which can sublime or vaporize at between 100° and 250° C., at atmospheric pressure and is a monoazo, anthraquinone, quinophthalone or styryl dyestuff and wherein the particles are spherical and sphere-like shaped and have an average diameter of from 1 to 30 microns,

(b) said developer is fixed on a photoconducting surface by heat and/or pressing before the dyestuff is transferred onto a receiving sheet

(c) each image thus developed is brought into contact with a receiving surface which possesses affinity for the vapor of the sublimable or vaporizable dyestuff or dyestuffs of said developers, and

(d) the resulting material is heated above the vaporization or sublimation temperature of the dyestuff or dyestuffs to be transferred, these operations being carried out in the case of each latent image, until the image to be reproduced has been recomposed.

4,251,612

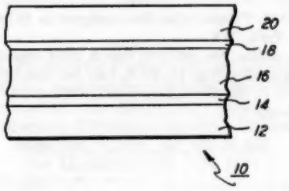
DIELECTRIC OVERCOATED PHOTORESPONSIVE IMAGING MEMBER

Joseph Y. C. Chu, Fairport, and Simpei Tutihasi, Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 12, 1978, Ser. No. 905,250

Int. Cl.³ G03G 5/04, 5/14

U.S. Cl. 430—59 15 Claims



1. A layered photosensitive imaging member which comprises from the bottom up:

(a) an electrically conductive substrate;

(b) a layer of material capable of injecting holes into a layer on its surface, this layer being comprised of materials selected from the group consisting of carbon dispersed in a polymer and graphite dispersed in a polymer;

(c) a hole transport layer in operative contact with the layer of hole injecting material, which transport layer comprises a combination of a highly insulating organic resin having dispersed therein small molecules of an electrically active material, the combination of which is substantially non-absorbing to visible light but allows injection of photogenerated holes from a charge generator in contact with the hole transport layer and electrically induced holes from the layer of injecting material;

(d) a layer of charge generating photoconductive material on and in operative contact with the charge transport layer; and

(e) a layer of insulating organic resin overlaying the layer of charge generating material.

4,251,613

DISAZO COMPOUNDS, PROCESS FOR PREPARATION OF SAME AND APPLICATION OF SAID DISAZO COMPOUNDS AND ANALOGUES THEREOF TO ELECTROPHOTOGRAPHIC SENSITIVE MATERIALS

Masaomi Sasaki, Kawasaki; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Masafumi Ohta, Yokohama, and Kyoji Tsutsui, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

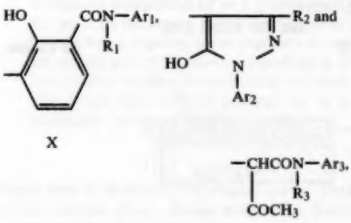
Filed May 22, 1978, Ser. No. 908,116

Claims priority, application Japan, Jun. 8, 1977, 52-66711; Jun. 9, 1977, 52-68182; Jun. 20, 1977, 52-72205; Jun. 30, 1977, 52-77155

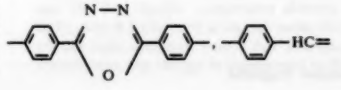
Int. Cl.³ G03G 5/06, 13/22

U.S. Cl. 430—72 60 Claims

1. An electrophotographic material which comprises an electrically conductive support and a photosensitive layer formed thereon, said photosensitive layer consisting essentially of fine particles of a disazo compound having the formula A′—N=N—Z—N=N—A′, wherein A′ is a member selected from the group consisting of



is a fused ring selected from the group consisting of benzene ring, bromobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, dimethylphenyl, methylchlorophenyl, methoxychlorophenyl, methoxybromophenyl, ethoxychlorophenyl, methylmethoxyphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, nitrophenyl, benzenesulfonamide, benzenesulfonic acid, trichlorobenzenesulfonic acid, methylphenyl, methoxyphenyl, chlorophenyl, dinitrophenyl, cyanophenyl, dimethylaminophenyl and acetylaminophenyl; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl; and R_2 is selected from the group consisting of methyl, carboxyl and $COOC_2H_5$; and Z is a member selected from the group consisting of



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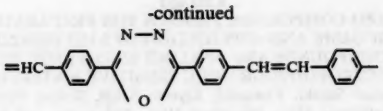
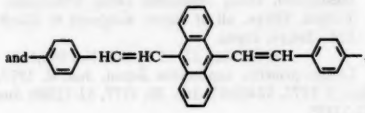


and



and a resinous binder.

4,251,614

NOVEL DISAZO COMPOUNDS, PROCESS FOR THE PREPARATION OF SAME AND APPLICATION OF SAID DISAZO COMPOUNDS AND ANALOGUES THEREOF TO ELECTROPHOTOGRAPHIC SENSITIVE MATERIALS

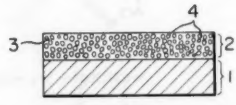
Masaomi Sasaki, Kawasaki; Kiyoshi Sakai, Tokyo; Mitsuru Hashimoto, Hino; Masafumi Ohta, Yokohama, and Kyoji Tsutsui, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 30, 1978, Ser. No. 921,086

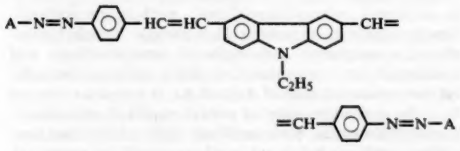
Claims priority, application Japan, Jul. 5, 1977, 52/80116; Jul. 8, 1977, 52/81791

Int. Cl.³ G03G 5/06

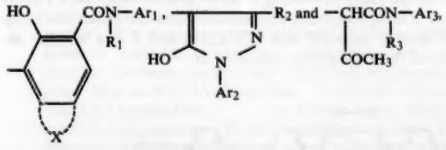
U.S. Cl. 430—79 **68 Claims**



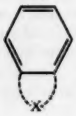
1. An electrophotographic material which comprises an electrically conductive support and a photosensitive layer formed thereon, said photosensitive layer consisting essentially of a disazo pigment having a particle size of 5 microns or less, said disazo pigment having the formula



wherein A is a member selected from the group consisting of



wherein the molecular fragment



is a fused polycyclic ring system in which the segment

is selected from the group consisting of benzene ring, halobenzene ring, naphthalene ring, indole ring, carbazole ring and benzofuran ring; Ar_1 is a member selected from the group consisting of phenyl, methylphenyl, methoxyphenyl, chlorophenyl, nitrophenyl, ethoxyphenyl, methylchlorophenyl, dimethylphenyl, methoxychlorophenyl, methoxybromophenyl, methoxymethylphenyl, dimethoxyphenyl, dimethoxychlorophenyl, dimethylaminophenyl, cyanophenyl, carboxyphenyl, benzenesulfonic acid sodium salt, tert-butoxyphenyl, naphthyl, methoxydibenzofuryl and carbazolyl; each of Ar_2 and Ar_3 is a member selected from the group consisting of phenyl, naphthyl, methoxyphenyl, methylphenyl, acetylaminophenyl, dimethylaminophenyl, cyanophenyl, nitrophenyl, dinitrophenyl, chlorophenyl, trichlorobenzenesulfonic acid, benzenesulfonic acid and benzenesulfonamide; each of R_1 and R_3 is a member selected from the group consisting of hydrogen, methyl, ethyl, phenyl and chlorophenyl; and R_2 is a member selected from the group consisting of methyl, carboxyl and $—COOC_2H_5$; and a resinous binder.

4,251,615

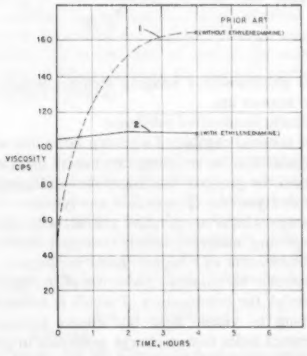
VISCOSITY STABILIZED PHOTOCONDUCTIVE COATING MATERIAL AND SHEET MATERIAL USING SAME

Fritz Rosenthal, Phoenixville, Pa., assignor to SCM Corporation, New York, N.Y.

Continuation of Ser. No. 440,131, Feb. 5, 1974, abandoned. This application Sep. 19, 1975, Ser. No. 614,825

Int. Cl.² G03G 5/022, 5/08

U.S. Cl. 430—89 **13 Claims**



1. In a liquid dispersion of photoconductive metal-compound particles and a solution of resinous binder containing a particular amount of carboxyl groups, the dispersion being suitable as a photoconductive coating formulation for application to sheet material for coating same, but subject to unstable viscosity caused by metal ions arising from reaction between

the carboxyl groups and the photoconductive particles, and the major portion of the liquid being organic, the improvement wherein said dispersion contains a chelating agent in an amount related to the amount of the carboxyl groups, said agent having the property of complexing ions of the metal in said photoconductive metal-compound particles by the formation of a ring structure incorporating the metal ions, thereby stabilizing the viscosity of the dispersion.

4. In a method for preparing a photoconductive coating material comprising a liquid dispersion of photoconductive metal-compound particles in a solution of resinous binder material containing a particular amount of carboxyl groups and being suitable as a photoconductive coating for sheet material, an organic liquid forming the major portion of the liquid, and the dispersion being subject to unstable viscosity caused by metal ions arising from reaction between the carboxyl groups and photoconductive particles, the step of:

incorporating into said dispersion a chelating agent having the property of complexing ions of the metal in said photoconductive metal-compound particles for stabilizing the viscosity of the coating material, said chelating agent being provided in an amount related to said particular amount of carboxyl groups.

4,251,616

MAGNETIC TONERS AND DEVELOPMENT PROCESS

Dieter Hendriks, Geneva, Switzerland, assignor to Sublistatic Holding SA, Glaris, Switzerland

Filed Jun. 23, 1977, Ser. No. 809,495

Claims priority, application Switzerland, Jan. 7, 1976, 8430/76

Int. Cl.³ G03G *13/09, 9/14*

U.S. Cl. 430—107 **10 Claims**

1. Dry developer for the development of electrophotographic latent images, consisting of a single type of very fine particle containing from 5 to 20 percent of an electrically conductive substance, a magnetic substance one or more dyestuffs which are sublimable or vaporisable between 130° and 240° C. and a binder, characterised in that it has a high conductivity, greater than 10^{-2} Siemens/cm, and in that this conductivity is independent of the value of the electrical field applied.

4,251,617

NOVEL SILVER COMPLEXING AGENTS

Stanley M. Bloom, deceased, late of Maban, Mass. (by Arlene N. Bloom, executrix), and Krishna G. Sachdev, Cambridge, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Oct. 1, 1979, Ser. No. 80,440

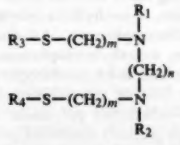
Int. Cl.³ G03C *5/54, 5/38, 1/06*

U.S. Cl. 430—234 **9 Claims**

1. A diffusion transfer photographic process comprising the steps of:

(a) reacting exposed silver halide in an image-wise exposed photosensitive silver halide emulsion layer carried on a support with a silver halide developing agent in aqueous alkaline solution;

(b) reacting unreduced silver halide in said photosensitive emulsion with at least one silver complexing compound to form a complex silver salt that is soluble in said alkaline solution, said silver complexing compound being represented by the formula:



wherein m is 2 or 3; n is 2 or 3; R_1 and R_2 may be the same or different and may be H, alkyl, alkoxyalkyl, hydroxyalkyl or aminoalkyl having two to six carbon atoms; and R_3 and R_4 may be the same or different and may be alkyl, alkoxyalkyl, hydroxyalkyl or aminoalkyl having two to six carbon atoms,

(c) transferring said silver complex salt to a superposed image-receiving layer; and

(d) reducing said complex silver salt on said image-receiving layer to provide a silver image thereon.

4,251,618

POSITIVE AND NEGATIVE WORKING IMAGING SYSTEMS FROM PHOTOACTIVE PLASTISOLS

Peter J. McCartin, Princeton Junction, N.J., and William J. Nebe, Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 11, 1978, Ser. No. 950,307

Int. Cl.³ G03C *1/68*

U.S. Cl. 430—270 **9 Claims**

1. Photoactive, thermally coalescible polyvinyl chloride resin plastisol dispersion consisting essentially of

(a) particles having a mean diameter in the range of 0.1 to 20 μm of a solid polyvinyl chloride polymer having attached to the backbone thereof photopolymerizable or photocrosslinkable groups taken from the group consisting of anhydrides, carbonyl, carboxyl, isocyanate, methylol and ethylenically unsaturated substituents in amounts of 0.1 to 16% by weight based on the total weight of polymer, the polymer having an inherent viscosity in the range of 0.1 to 1.2 and being dispersed in

(b) a liquid medium compatible with the particles that comprises a plasticizer for the polymer and is nonvolatile at room temperature and has no substantial solvent activity for the polymer at room temperature and

(c) a photoinitiator or photoinitiator system present either as a separate component or as a photoactive substituent on the polymer backbone, the photoinitiator or photoinitiator system being capable, upon exposure to actinic radiation, of causing polymerization or crosslinking of the photopolymerizable or photocrosslinkable polymer, respectively, the weight ratio of solid polymer (a) to weight ratio of plasticizer (b) being 70/30 to 30/70.

4,251,619

PROCESS FOR FORMING PHOTO-POLYMERIC IMAGE

Yoshio Kurita, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Hino, Japan

Continuation of Ser. No. 913,213, Jun. 6, 1978, abandoned. This application Dec. 20, 1979, Ser. No. 105,540

Claims priority, application Japan, Jun. 8, 1977, 52-68075

Int. Cl.³ G03C *5/04, 1/68*

U.S. Cl. 430—292 **11 Claims**

1. A process for forming a photo-polymerized image by the use of a light-sensitive layer which process comprises:

a first step of exposing the light-sensitive layer to an activating ray in the form of visible light, UV light, an electron beam or X-rays, the light-sensitive layer containing (A) an activating component in the form of a free radical generating agent or an active radiation oxidizing agent which is capable of being activated by the activating ray, (B) a light-sensitive resin selected from compounds which increase in molecular weight by being polymerized or crosslinked by means of light or compounds which vary in chemical or physical properties by being decomposed or reacted by means of light, and (C) a colorable or decolorable component selected from an arylamine, N-vinyl compounds, a leuco compound or a styryl, cyanine or merocyanine dye which is capable of being colored or decolored by the activated activating component provided that when the color of both the colored colorable component and the decolorable component absorbs an energy of a light, which light itself does not cause the polymerization of the light-sensitive resins nor activate the activating component, the energy is transferred to the light-sensitive

resin for polymerization; whereby the colorable or decolorable component is either colored or decolored; and a second step of exposing the light-sensitive layer, resulting from the first step, to the light imagewise when the exposure in the first step is uniform, and uniformly when the exposure in the first step is imagewise, so that the light-sensitive resin is polymerized by the energy from the decolorable component or the colored colorable component to form the photo-polymerized image.

4,251,620

LIGHT-SENSITIVE PRINTING PLATE PROCESS

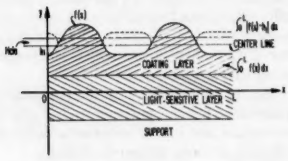
Kazutaka Oda, and Yoshio Okishi, both of Kawajiri Yoshida, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Division of Ser. No. 878,355, Feb. 16, 1978, which is a continuation of Ser. No. 659,447, Feb. 19, 1976, abandoned. This application Oct. 29, 1979, Ser. No. 88,916

Claims priority, application Japan, Mar. 24, 1975, 50-35940; Feb. 19, 1978, 53-20320

Int. Cl.³ G03F *7/02*; G03C *1/72*

U.S. Cl. 430—300 **8 Claims**



1. A process for producing a light sensitive printing plate with a coating layer removable at the time of development provided on the surface thereof which comprises taking up a coating solution with a gravure roll, scraping away excess coating solution attached to the gravure roll by means of a doctor blade, transferring the coating solution to a coating roll made of an elastic material with a fine uneven pattern on the surface thereof and turning in the same direction and at the same speed as the gravure roll, and transferring the coating solution transferred to the coating roll to a support running at the same speed and in the same direction as the coating roll said support having a light sensitive layer and said deposited coating produces an uneven pattern of a discontinuous coating layer consisting of coated areas and uncoated areas, the height of the coated areas being about 2 to 40 microns, and the distance between the coated areas adjacent to each other is about 50 to 100,000 microns.

4,251,621

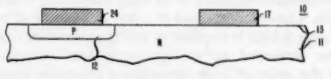
SELECTIVE METAL ETCHING OF TWO GOLD ALLOYS ON COMMON SURFACE FOR SEMICONDUCTOR CONTACTS

Phillip E. Fraley, Reading, and Ronald L. Lapinsky, Laureldale, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 13, 1979, Ser. No. 93,939

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—312 **6 Claims**



1. A method of fabricating low resistance contacts to a semiconductor device comprising a body of semiconductor material, the body having a major surface and first and second portions of opposite conductivity type adjoining the major surface, the contact to the first portion comprising a first gold alloy and the contact to the second portion comprising a second gold alloy different from the first gold alloy, the method comprising,

(1) forming by deposition, photolithography, and chemical etching a first gold alloy contact on a limited area of the surface of the first portion,

(2) depositing a layer of titanium completely over the first gold alloy contact and the portion of the surface peripheral to the contact,

(3) coating the entire surface of the titanium layer with a gold layer,

(4) photolithographically forming a photoresist mask that is coextensive with the surface at the said second portion of the surface,

(5) etching away the gold and titanium layers not protected by said photoresist mask to bare the said second portion of the surface,

(6) coating the said second gold alloy over the said bared second portion of the surface and on the remaining gold layer from step (3) above,

(7) photolithographically forming another photoresist mask which protects the second gold alloy only at the said second portion of the surface,

(8) etching away the non-protected layers of the second gold alloy and the gold layer of step (3) above, leaving the titanium layer,

(9) removing the titanium layer by treating the body with an etchant which attacks titanium but does not attack gold or gold alloys,

(10) heating the body to alloy the contacts.

4,251,622

PHOTO-SENSITIVE COMPOSITION FOR DRY FORMATION OF IMAGE

Koichi Kimoto, Kyoto; Yasusi Umeda, Osaka; Shin Saito, Suita; Kunsei Tanabe, Hirakata, and Yasuyuki Takimoto, Takatsuki, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 667,973, Mar. 18, 1976, abandoned, which is a continuation of Ser. No. 474,149, May 28, 1974, abandoned. This application Mar. 1, 1978, Ser. No. 882,894

Claims priority, application Japan, May 25, 1973, 48/59444; Oct. 11, 1973, 48/114250; Canada, May 24, 1974, 200802; Fed. Rep. of Germany, May 25, 1974, 2425359; Belgium, May 27, 1974, 144759; France, May 27, 1974, 7418289; United Kingdom, May 28, 1974, 23686/74

Int. Cl.³ G03C *1/52*

U.S. Cl. 430—332 **7 Claims**

1. A photo-sensitive composition used for the dry formation of an image without requiring any fixing operation consisting essentially of a dyestuff having photofading properties selected from the group consisting of an azo dyestuff, a triphenylmethane dyestuff, a xanthene dyestuff, and an oxazine dyestuff; an aryl ketone sensitizing agent selected from the group consisting of benzophenone, 4-methylbenzophenone, 4-chlorobenzophenone, 4-ethylbenzophenone, 4,4'-dimethoxybenzophenone, acetophenone, 4-methylacetophenone, propiophenone, benzalacetophenone and ω-bromoacetophenone; and a high molecular polymer binding agent selected from the group consisting of an N-substituted polyamide resin and a vinyl acetate polymer or its partially saponified product, wherein the proportions of the dyestuff, the ketonic sensitizing agent and the high molecular polymer are 0.05 to 20:0.2 to 200:100 parts by weight.

4,251,623
IMAGING PROCESS INVOLVING THERMAL DECOMPOSITION OF TE(II) COORDINATION COMPLEXES

Henry J. Gysling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 863,199, Dec. 22, 1977, Pat. No. 4,188,218, which is a continuation-in-part of Ser. No. 703,405, Jul. 8, 1976, abandoned. This application Jun. 21, 1979, Ser. No. 50,713

Int. Cl.[3] **G03C** *5/24*

U.S. Cl. 430—353 **9 Claims**

1. A process for forming a visible metallic image which comprises the steps of

(1) forming an image comprising nuclei of one or more metals selected from the group consisting of Te, Pd, Ag and Cu; and

(2) employing said nuclei to catalyze the thermal decomposition of a coordination complex to form said visible image, said coordination complex being a complex of tellurium (II) and at least one sulfur containing ligand wherein said tellurium (II) is coordinated to said ligand through said sulfur.

4,251,624
STABILIZING COLORED PHOTOGRAPHIC PRINT AGAINST FADING AND STAINING

Evelyn F. England, 1330 N. Orange Dr., Apt. 111, Hollywood, Calif. 90028

Filed Feb. 23, 1979, Ser. No. 14,333

Int. Cl.[2] **G03C** *7/00, 7/16*

U.S. Cl. 430—372 **3 Claims**

1. An after treatment method of treating developed color print and color film to stabilize them from staining and fading when exposed to direct sunlight, ultraviolet light, high temperatures and high humidity which includes the step of:

a. preparing an aqueous solution containing formaldehyde, acetic acid and sodium chloride; and

b. immersing said color print and color film in said solution for a period of time not greater than ten minutes to stabilize said color thereon from fading.

4,251,625
METHOD OF PRODUCING A HALFTONE PICTURE BY VIBRATING LIGHT SOURCE

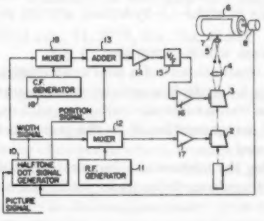
Seiya Sakamoto, Kyoto, and Tetsuo Hohki, Ibaragi, both of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Oct. 26, 1978, Ser. No. 955,270

Claims priority, application Japan, Nov. 1, 1977, 52-131367

Int. Cl.[3] **G03F** *5/00;* **G03C** *5/04*

U.S. Cl. 430—396 **10 Claims**



1. A method for producing a half-tone picture on a photosensitive material, wherein the halftone dots are produced along a line of an arbitrary screen angle with respect to a scanning direction, comprising the steps of:

forming a spot of light on the surface of the material;

causing a motion of the material relative to the spot in a scanning direction;

vibrating the spot to and fro along a vibration direction which is at a substantial angle to the scanning direction through a certain vibration width about a central point, the vibration center; and

controlling the amplitude of the vibration width and the position of the vibration center by guiding the center of the vibration along a line substantially equal to the screen angle with respect to the scanning direction so that the spot exposes areas on the photosensitive material which form half-tone dots, as the material moves relative to the spot in the scanning direction.

4,251,626
SILVER HALIDE PHOTOGRAPHIC MATERIALS CONTAINING GELATIN REACTIVE ANTISTATIC AGENTS

Junji Minamizono; Masakazu Yoneyama, and Shinzo Kishimoto, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Jan. 25, 1980, Ser. No. 115,314

Claims priority, application Japan, Jan. 25, 1979, 54/7946; Nov. 21, 1979, 54/150874

Int. Cl.[3] **G03C** *1/02, 1/78*

U.S. Cl. 430—527 **8 Claims**

1. A silver halide photographic material comprising a support having thereon at least a gelatin-containing layer containing a gelatin-reactive surface active agent having at least one long chain hydrophobic group, at least one hydrophilic group selected from a cationic group, an anionic group, an amphoteric group, and a nonionic group, and at least one group reactive with gelatin in the molecule thereof.

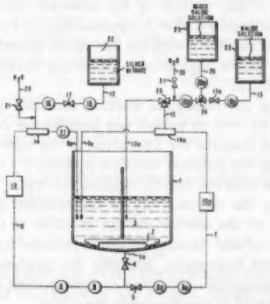
4,251,627
JET MIXING IN PREPARATION OF MONODISPERSE SILVER HALIDE EMULSIONS

Narasimhan Calamur, Aurora, Ill., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed May 30, 1978, Ser. No. 910,850

Int. Cl.[3] **G03C** *1/02*

U.S. Cl. 430—569 **7 Claims**



1. A process for preparing a photographic emulsion having a controlled silver halide grain size, structure, and size distribution, which comprises the steps of:

(1) charging a precipation vessel with an aqueous solution of gelatin,

(2) cycling a portion of said aqueous solution of gelatin through a first line, adding silver nitrate thereto to form a first stream, and returing said stream to said precipitation vessel,

(3) simultaneously cycling another portion of said aqueous solution of gelatin through a second line, adding an alkali metal halide or mixed halide solution thereto to form a second stream, and returning said second stream to said precipitation vessel,

(4) mixing both streams in said vessel to precipitate silver halide grains therein,

(5) recycling the contents of said precipitation vessel into said first and second stream, and thence back into the precipitation vessel, whereby additional silver halide is precipitated on the initially precipitated grains to form silver halide grains of controlled structure, size and size distribution,

characterized in that all of the aforesaid streams are introduced into the precipitation vessel in the form of high velocity downwardly directed jets positioned in close proximity to each other and which terminate below the liquid level in the vessel, whereby the recycled streams are uniformly mixed in a defined region and silver halide grains are precipitated at uniform pAg.

4,251,628

SUBSTRATES FOR ANGIOTENSIN CONVERTING ENZYME

James W. Ryan, 3420 Painciana Ave. Miami. Fla. 33133 Alfred Chung, 8781 SW 87th St., Miami, Fla. 33173

Division of Ser. No. 795,497, May 10, 1977, Pat. No. 4,115,374. This application Mar. 14, 1978, Ser. No. 886,511

Int. Cl.³ C12Q *1/36*

U.S. Cl. 435—24 **12 Claims**

1. A method for the quantitative measurement of angiotensin converting enzyme activity in biological material comprising the steps of:

providing a substrate for the enzyme selected from the group consisting of acylated peptides having the property of being reversibly bound by the enzyme, having the property of being essentially insoluble in an aprotic organic solvent, having a free carboxyl end group and having a peptide bond susceptible of hydrolysis catalyzed by the enzyme, said hydrolysis resulting in the formation of a dipeptide reaction product and a remnant product, said remnant product having the property of being essentially quantitatively extractable from the biological material by the aprotic organic solvent, at least a portion of said substrate containing a radioactive isotope incorporated exclusively in that portion of the substrate that becomes the remnant product after enzyme-catalyzed hydrolysis,

mixing the substrate with the biological material under conditions where angiotensin converting enzyme is catalytically active,

incubating the biological material-substrate mixture for a measured time to permit any angiotensin converting enzyme to catalyze the hydrolysis of the substrate,

separating the remnant reaction product by extracting the mixture with the aprotic organic solvent,

measuring the radioactivity of the remnant product in an aliquot of the solvent extract in order to determine the amount of said remnant product produced by any enzyme-catalyzed hydrolysis, whereby the catalytic acitivity of any angiotensin converting enzyme present in the biological material is quantitatively measured.

4,251,629

DETERMINATION OF HYDROGEN PEROXIDE

Kazuhiko Yamanisi, Tokyo; Kuniaki Tokuda, and Tosiro Hanada, both of Kawagoe, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Jul. 28, 1978, Ser. No. 928,804

Claims priority, application Japan, Jul. 29, 1977, 52-90989

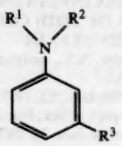
Int. Cl.³ C12Q *1/28;* G01N *31/00*

U.S. Cl. 435—28 **10 Claims**

1. A composition for producing color producing reagents for determining hydrogen peroxide which comprises

4-aminoantipyrine,

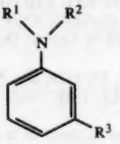
a N-substituted-3-alkylaniline of the formula:



(I)

wherein R^1 is a member selected from the group consisting of a lower alkyl group having 1 to 5 carbon atoms and a hydroxyalkyl group having 1 to 5 carbon atoms; R^2 is a member selected from the group consisting of a lower alkyl group having 1 to 5 carbon atoms and a hydroxyalkyl group having 1 to 5 carbon atoms and R^3 is methyl, ethyl or propyl, and an agent for activating hydrogen peroxide.

10. In a method for determining hydrogen peroxide in an enzymatic reaction system wherein 4-aminoantipyrine is oxidatively condensed with an aniline to produce a color developed material and the optical absorbance of the color developed material is determined, the improvement comprising employing an N-substituted-3-alkylaniline of the formula:



wherein R^1 is a member selected from the group consisting of a lower alkyl group having 1 to 5 carbon atoms and a hydroxyalkyl group having 1 to 5 carbon atoms; R^2 is a member selected from the group consisting of a lower alkyl group having 1 to 5 carbon atoms and a hydroxyalkyl group having 1 to 5 carbon atoms and R^3 is methyl, ethyl or propyl, in the presence of an agent for activating hydrogen peroxide.

4,251,630

PREPARATION OF MALT HIGH IN ALPHA-1,6-HYDROLASE

George W. Pratt, Milwaukee, Wis.; Thomas W. Chapple, Sierra Madre, Calif., and Michael J. Fahy, Golden, Colo., assignors to Kurth Malting Corporation, Milwaukee, Wis.

Filed Jul. 28, 1978, Ser. No. 928,812

Int. Cl.³ C12P *19/16, 19/12;* A23L *1/202;* C12C *1/04*

U.S. Cl. 435—98 **4 Claims**

1. A dried malt having an average acrospire length of at least three times the average length of the kernels and containing at least 55 units of alpha-1,6-hydrolase activity per one gram of dried malt.

4. A process which comprises:

adding a small amount of a malt containing at least 55 units of alpha-1,6-hydrolase activity per one gram of malt to an aqueous starch substrate containing a 0.1 molar concentration of manganese based on the water in the starch substrate, and

maintaining the mixture at a temperature of about 35° to 75° C. for about 4 to 96 hours to produce a maltose syrup.

4,251,631

CROSS-LINKED ENZYME MEMBRANE

Shulamith Simon, Ramat Gan, Israel, assignor to Research Products Rehovot Ltd., Rehovot, Israel

Filed Feb. 1, 1979, Ser. No. 8,894

Claims priority, application Israel, Feb. 23, 1978, 54116

Int. Cl.³ C12P *13/04;* C12N *11/08;* C12M *1/40;* C12N *9/76*

U.S. Cl. 435—106 **15 Claims**

11. An immobilized-enzyme flow-through reactor suitable

for effecting an enzymatic reaction comprising a microporous non-fibrous filter membrane having a pore size of between about 0.1 to 2.0 microns and made of a silica modified vinyl-chloride polymer selected from the group consisting of polyvinyl chloride, vinyl chloride-propylene copolymer and vinyl chloride-vinyl acetate copolymer and having an enzyme immobilized in the pores thereof by directly adsorbing the enzyme in the pores and then cross-linking the enzyme by means of a bi-functional coupling agent, whereby enzyme molecules in the pores are cross-linked to each other but are not chemically bound directly or through a bridging group to the microporous non-fibrous filter membrane.

4,251,632

PREPARATION OF A BACTERIAL CELL AGGREGATE

Anthony H. Chen, and Yun-Chi Jao, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Sep. 11, 1978, Ser. No. 941,152
Int. Cl.[3] C12N *11/08*; C12P *19/24*
U.S. Cl. 435—180 **6 Claims**

1. A process for producing an extruded Streptomyces olivaceus bacterial cell aggregate having improved hardness which comprises forming a bacterial cell aggregate by contacting a mass of Streptomyces olivaceus bacterial cells for 0.5 to 1.5 hours with a cross-linking reaction product of (1) a material selected from the class consisting of glutaraldehyde, cyanuric halide and combinations thereof and (2) a water-soluble cationic polymer obtained by the polymerization of an epihalohydrin with an alkylene polyamine having the formula $R_1R_2NRNH_2$ wherein R is a lower alkylene having from 2 to about 6 carbon atoms, and R_1 and R_2 are each a lower alkyl of from 1 to about 6 carbon atoms, the mole ratio of epihalohydrin to polyamine being from about 0.60:1 to about 2.7:1, said polymerization comprising reacting with the alkylene polyamine from about 50 to about 90 percent of the amount of epihalohydrin to be polymerized, allowing the reaction to continue until the reaction medium attains a substantially uniform viscosity, and reacting the remaining portion of the epihalohydrin incrementally to obtain the cationic polymer, the temperature of polymerization being from about 60° C. to about 120° C., adding to said bacterial cell aggregate a portion of previously-produced dried finely-divided bacterial cell aggregate of the same overall composition to form a bacterial cell aggregate mixture, extruding such mixture through a die of reduced cross-sectional area, drying the extrudate, and grinding and separating the extrudate to produce the desired particle size range.

4,251,633

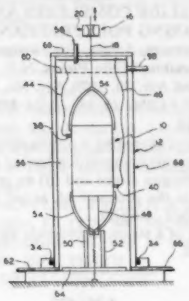
MULTI-STAGE CONTINUOUS SYSTEM FOR PRODUCTION OF HETEROPOLYSACCHARIDES

David C. Orlowski, 190110 Sixth Ave., West Milan, Ill. 61264, and Brooks D. Church, 326 W. Caley Dr., Littleton, Colo. 80120

Filed Jun. 11, 1979, Ser. No. 48,013
Int. Cl.[3] C12M *1/40*
U.S. Cl. 435—288 **8 Claims**

1. A multi-stage continuous system for producing heteropolysaccharides comprising:

(a) a fermentation stage consisting of an outer enzyme/nutrient containing chamber in which a membranous microbial growth chamber is movably mounted, said growth chamber being arranged to continuously produce *Xanthomonas campestris* cells in the near stationary growth phase and transfer polymerizing exo-enzymes and cell lysate therefrom into the surrounding medium of said enzyme/nutrient chamber and to retain said *Xanthomonas campestris* cells; and wherein said growth chamber is connected to eccentric drive means which moves said growth chamber in a manner to facilitate transfer of exo-enzymes and cell lysate therefrom into the surrounding nutrient/enzyme medium, and to produce in said growth chamber a Bernoullian presentation pressure on a forward membrane with an equal and opposite negative pressure on a rear membrane surface, thereby retaining the *Xanthomonas campestris* cells in said growth chamber; and



(b) a cell-free polymerization stage consisting of at least one module to receive said exo-enzymes and cell lysate from said fermentation stage to produce said heteropolysaccharides.

4,251,634

HYDROPHILIC MACROPOROUS THREE DIMENSIONAL COPOLYMERS OF HYDROXYALKYL ACRYLATES OR METHACRYLATES WITH CROSSLINKING AGENTS AND THE METHOD OF THEIR MANUFACTURING

Jiri Coupek; Karel Filka, and Jan Kocourek, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Filed Apr. 28, 1978, Ser. No. 900,892
Claims priority, application Czechoslovakia, May 3, 1977, 2890/77; May 3, 1977, 2891/77
Int. Cl.[3] C08J *9/36*
U.S. Cl. 521—84 **2 Claims**

1. Hydrophilic macroporous three dimensional copolymers of hydroxyalkyl acrylates or hydroxyalkyl methacrylates, said hydroxyalkyl containing 1–4 carbon atoms, and containing crosslinking agents in amount of 15 to 50 weight percent selected from the group consisting of ethylene diacrylate and ethylene dimethacrylate, wherein said copolymers contain, after glycosylation reaction at the surface, saccharides or their derivatives, selected from the group consisting of monosaccharides, oligosaccharides, deoxy sugars, amino sugars, acylated saccharides, ether or halogen derivatives of monosaccharides and oligosaccharides.

4,251,635

PRODUCTION OF POLYURETHANE FOAM OF REDUCED TENDENCY TO FORM EMBERS WHEN BURNED

Herman Stone, Hazleton, Pa., assignor to Tenneco Chemicals, Inc., Saddle Brook, N.J.

Filed Sep. 19, 1979, Ser. No. 76,877
Int. Cl.[3] C08G *18/14, 18/30*
U.S. Cl. 521—113 **12 Claims**

1. In a process for the manufacture of flexible resilient polyurethane foam by the reaction of at least one polyol and at least one organic polyisocyanate in the presence of at least one blowing agent and at least one catalyst, the improvement comprising the steps of incorporating into the mixture to be foamed at least one drip inhibitor selected from ketones having from about 5 to about 12 carbon atoms, in amount sufficient to reduce the formation of dripping, burning, embers when said foam is burned, and at least one flame retardant in amount

sufficient to increase the flame retardant properties of said foam.

4,251,636

STANNOUS HALIDE COMPLEXES AND THEIR USE IN PREPARING POLYURETHANE FOAMS

Robert L. Zimmerman, Austin, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Apr. 30, 1979, Ser. No. 35,024

Int. Cl.³ C08G *18/14, 18/24;* B01J *31/22*

U.S. Cl. 521—114 **36 Claims**

1. The process of preparing a polyurethane which comprises reacting (i) an organic composition having at least two Zerewitinoff-active hydrogen atoms and (ii) an organic polyfuctional polyisocyanate, in the presence of, as gel catalyst, (iii) a stannous halide alcohol complex.

26. A solution of a stannous bromide alcohol complex in an excess of alcohol.

4,251,637

TERTIARY AMINO SUBSTITUTED OXAZOLIDINES AS POLYISOCYANURATE CATALYSTS

Edward E. McEntire; Robert L. Zimmerman, both of Austin, and Howard P. Klein, Houston, all of Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

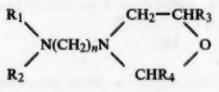
Filed Sep. 13, 1979, Ser. No. 75,437

Int. Cl.³ C08G *18/20*

U.S. Cl. 521—115 **5 Claims**

1. In a process for preparing a polymer containing recurring isocyanurate and urethane linkages, which polymer comprises the reaction product of a polyol and an aromatic polyisocyanate, while utilizing an isocyanurate group formation catalyst; the improvement which comprises

employing as said isocyanurate catalyst a tertiary amino substituted oxazolidine falling within the following structural formula



where R_1 and R_2 taken singly are lower alkyl groups or R_1 andR_2 taken jointly together with the adjacent nitrogen atom are cycloalkyl or morpholino and R_3 and R_4 are each taken from the group consisting of hydrogen and lower alkyl and n is about 2 to 4.

4,251,638

PROCESS FOR THE PRODUCTION OF POLYURETHANE PLASTICS

Artur Reischl, Leverkusen, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 29, 1979, Ser. No. 89,322

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1978, 2846809

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—128 **9 Claims**

1. A process for the production of optionally cellular polyurethane plastics by the polyaddition of

(A) polyisocyanates and, optionally,

(B) low molecular weight and/or relatively high molecular weight compounds containing isocyanate-reactive hydrogen atoms, in the presence of

(C) organic fillers and, optionally,

(D) blowing agents, catalysts and other known additives, wherein the improvement comprises component (C) being a crosslinked distillation residue which is insoluble in inert organic solvents and which cannot be melted without decomposing, and which contains less than 15% free isocyanate groups, of the type accumulating as slag in the distillation of monomeric tolylene diisocyanates from the crude phosgenation products of tolylene diamines and which have been size-reduced to a mean particle size of less than 800 mμ.

4,251,639

MANUFACTURE OF FLEXIBLE FOAMS

Wolfgang Jarre, Ludwigshafen; Herbert Stutz, Karlsruhe, and Ernst Schoen, Diepholz, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Apr. 9, 1979, Ser. No. 28,313

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1978, 2815579

Int. Cl.³ C08G *18/14*

U.S. Cl. 521—159 **8 Claims**

1. A process for the manufacture of flexible polyurethane foams by carrying out a foaming reaction using a reaction mixture comprising organic polyisocyanates, polyols, catalysts, foaming agents and optionally, chain extenders, auxiliaries and additives, wherein the improvement comprises said organic polyisocyanate having NCO contents of 15 to 30 percent by weight and a viscosity of 100 to 2000 centipoises at 20° C. wherein said organic polyisocyanate is a mixture of diphenylmethane diisocyanates and polyphenylene polymethylene polyisocyanates containing 55 to 85 percent by weight of diphenylmethane diisocyanate based on the total weight of the polyisocyanate mixture and wherein said organic polyisocyanate mixture has been reacted with a hydroxyl compound having 2 to 3 Zerewitinoff active hydrogen atoms and a molecular weight of 60 to 1000 in an equivalency ratio of NCO group to active hydrogen atom of said hydroxyl compound of 2:1 to 60:1 prior to the reaction with other said polyols.

4,251,640

PROCESS FOR THE PREPARATION OF (CO)POLYMERIZABLE COMPOSITION

Arnold Schroeder, Deventer, and Paulus G. J. Nieuwenhuis, Bathmen, both of Netherlands, assignors to Akzona Incorporated, Asheville, N.C.

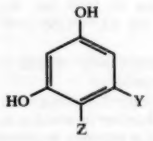
Filed Jun. 16, 1975, Ser. No. 587,492

Claims priority, application Netherlands, Jun. 19, 1974, 7408182

Int. Cl.³ C08L *67/06*

U.S. Cl. 525—17 **17 Claims**

1. In a process for the preparation of a polymerizable or copolymerizable composition containing a polymerizable unsaturated polyester and a peroxide initiator, the method of improving the acceleration of the polymerization which comprises incorporating in said composition a compound of the formula:



wherein Y is selected from the group consisting of hydroxy, alkoxy having 1–12 carbon atoms, and alkyl having 1–12 carbon atoms, and Z is selected from the group consisting of hydrogen, hydroxycarbonyl, alkyl, cycloalkyl, aralkyloxycarbonyl having 1–20 carbon atoms, benzoyl, and alkanoyl having 1–4 carbon atoms.

4. The process of claim 1 in which said composition further includes an accelerator.

6. The process of claim 4 in which the accelerator is cobalt naphthenate.

4,251,641

LOW SHRINKAGE POLYESTER RESIN COMPOSITIONS

Kouji Arakawa, and Kanemasa Nomaguchi, both of Hitachi, Japan, assignors to Hitachi Chemical Company, Ltd., Tokyo, Japan

Filed Dec. 4, 1979, Ser. No. 100,048
Int. Cl.[3] C08L 67/00
U.S. Cl. 525—36 2 Claims

1. A low shrinkage unsaturated polyester resin composition which comprises (1) 30–70 parts by weight of an unsaturated polyester obtained by reacting (a) an acid selected from the group consisting of terephthalic acid, isophthalic acid and mixtures thereof and (b) an unsaturated acid selected from the group consisting of maleic anhydride, maleic acid, fumaric acid, and mixtures thereof with (c) a glycol, said polyester having the unsaturation degree (moles of the unsaturated acids in 1,000 g. of the unsaturated polyester) of 1.5–5.0 and the acid value of 18–40, (2) 70–30 parts by weight of α,β-ethylenically unsaturated monomer, and (3) 5–30 parts by weight of an amorphous linear saturated polyester resin obtained by reacting an acid selected from the terephthalic acid, isophthalic acid and mixtures thereof with a glycol component.

4,251,642

COMPATIBLE POLYURETHANE BLENDS

King-Han Tan, Alkmaar, and Jan L. de Greef, Amsterdam, both of Netherlands, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Aug. 15, 1979, Ser. No. 66,719
Int. Cl.[3] C08L 55/02, 75/00, 53/02
U.S. Cl. 525—66 10 Claims

1. A blend of polymers comprising (1) from about 2.5 to about 80 parts of a block copolymer of styrene and a conjugated diolefin of 4–6 carbon atoms, (2) from about 10 to about 50 parts of a graft copolymer wherein a polymer of styrene and up to 40 parts, based on the weight of graft copolymer, of acrylonitrile and/or methyl methacrylate is grafted onto a rubbery substrate which is polybutadiene or a copolymer of butadiene, styrene, and up to 10% of acrylonitrile, and (3) from about 5 to about 50 parts of a thermoplastic elastomeric polyurethane containing a relatively high molecular weight segment of a polyester.

4,251,643

ABSORBENTS WITH IMPROVED WATER ABSORBING POWER

Kazuto Harada, and Toshihiko Yoshitake, both of Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 16, 1979, Ser. No. 21,169
Claims priority, application Japan, Mar. 23, 1978, 53/34575
Int. Cl.[3] C08F 8/46
U.S. Cl. 525—51 13 Claims

1. An absorbent material for aqueous fluids comprising a modified polyvinyl alcohol polymer obtained by a process which consists essentially of reacting in an anhydrous organic diluent a partially or fully saponified polymer or copolymer of a vinyl ester in powder form with a cyclic acid anhydride; thereby causing partial crosslinking of said polymer.

4,251,644

POLAR RESINS HAVING IMPROVED CHARACTERISTICS BY BLENDING WITH EPM AND EPDM POLYMERS

Ralph K. Joffrion, Baton Rouge, La., assignor to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed Oct. 1, 1979, Ser. No. 80,652
Int. Cl.[3] C08L 23/36, 51/04, 23/16
U.S. Cl. 525—64 6 Claims

1. A polar resin selected from the group consisting of polyamides and polyester resins having improved physical and mechanical properties comprising a blend of the polar resin with up to 50% by weight of an EPM or EPDM polymer which has been rendered more compatible with the polar resin by having incorporated therein polar groups as a monomer bound in the polymer by copolymerization with the EPM or EPDM monomers or grafted onto the EPM or EPDM polymer after formation thereof in which the polar groups are an amine or an amide group.

4,251,645

THERMOPLASTIC MOULDING COMPOSITIONS

Gert Humme, Odenthal; Karl-Heinz Ott, Leverkusen; Dietrich Hardt, Cologne, and Karl Dinges, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 707,547, Jul. 22, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,733
Claims priority, application Fed. Rep. of Germany, Jul. 30, 1975, 2533990; Apr. 14, 1976, 2616375
Int. Cl.[3] C08L 51/04
U.S. Cl. 525—75 7 Claims

1. A thermoplastic moulding composition consisting essentially of

(A) from 20 to 99 parts by weight of a vinyl chloride homopolymer or copolymer containing at least 80% by weight of vinyl chloride and having K-values of from 50 to 80; and

(B) from 80 to 1 part by weight of a graft polymer produced by the solution polymerization in an organic solvent monomers consisting essentially of

(a) a member selected from the group consisting of styrene, 2-methyl styrene, methyl methacrylate and mixtures thereof or

(b) acrylonitrile mixed with a member selected from the group consisting of styrene, 2-methyl styrene, methyl methacrylate and mixtures thereof in the presence of EPDM rubber.

4,251,646

THERMOPLASTIC BLEND OF POLYPROPYLENE, EPM AND PROPYLENE-ETHYLENE COPOLYMER

William S. Smith, Jr., Freehold, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 27, 1979, Ser. No. 61,358
Int. Cl.[3] C08L 23/16, 23/12
U.S. Cl. 525—88 5 Claims

1. A thermoplastic polymer blend exhibiting improved bulk material toughness and knit line toughness properties consisting essentially of (a) 60 to 90% by weight of polypropylene, (b) 30% to 5% by weight of a thermoplastic crystalline heteroblock propylene-ethylene copolymer, and (c) 30% to 5% by weight of a ethylene-propylene copolymer rubber containing about 30% to 80% by weight ethylene.

4,251,647

TERNARY POLYCARBONATE COMPOSITIONS

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Pittsfield, Mass.

Filed Mar. 20, 1980, Ser. No. 132,325
Int. Cl.[3] G08L 53/00
U.S. Cl. 525—91 23 Claims

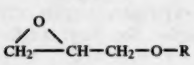
1. A ternary polycarbonate composition comprising an admixture of a high molecular weight aromatic polycarbonate, a minor amount of a styrene/butadiene/caprolactone block copolymer, and a minor amount of an acrylate copolymer or an olefin-acrylate copolymer, said acrylate copolymer being a copolymer of a C_1-C_5 acrylate and a C_1-C_5 methacrylate, said olefin-acrylate copolymer being a C_2-C_5 olefin and a C_1-C_5 acrylate copolymer.

4,251,648
PEROXIDE CURED EPIHALOHYDRIN POLYMERS

John T. Oetzel, Elyria, Ohio, assignor to The B.F. Goodrich Company, Akron, Ohio

Filed Jun. 27, 1977, Ser. No. 810,654
Int. Cl.[3] C08G 65/32
U.S. Cl. 525—187 23 Claims

1. A composition comprising a polymer of an epihalohydrin and an unsaturated glycidyl ether of the general formula



wherein R is an ethylenically unsaturated radical, an acid acceptor an unsaturated polyfunctional methacrylate and a curing agent consisting an organic peroxide.

4,251,649
HEAT-CURABLE AND SOLVENT-SOLUBLE ESTER GROUP-CONTAINING POLYMER COMPOSITIONS AND PROCESS FOR THEIR PREPARATION

Shigeyoshi Hara, and Tateyoshi Yamada, both of Hino, Japan, assignors to Teijin Limited, Osaka, Japan

Division of Ser. No. 593,644, Jul. 7, 1975, Pat. No. 4,137,221.
This application Apr. 6, 1978, Ser. No. 894,006
Claims priority, application Japan, Jul. 11, 1974, 49-78672; Sep. 30, 1974, 49-111649
Int. Cl.[3] C08L 67/02
U.S. Cl. 525—439 2 Claims

1. A heat-curable solvent-soluble ester group containing polymer composition comprising a mixture of (1) a solvent-soluble low molecular weight polyester in which at least 30 mole percent of the entire terminal groups are aryl carboxylate groups modified with a compound containing at least two functional groups selected from the group consisting of (a) a carboxyl group or its functional derivatives, (b) a cyclic carboxylic anhydride group or its precursors, (c) a primary or secondary amino group, (d) an isocyanate group or its stabilized groups or precursors, (e) an aminoacetic group or its functional derivatives, and (f) a hydroxyl group, and (2) a monomeric or solvent-soluble polymeric polyfunctional compound containing at least two reactive groups selected from the group consisting of hydroxyl, primary amino and secondary amino.

4,251,650
PROCESS FOR THE POLYMERIZATION OF ETHYLENE IN THE PRESENCE OF SILYL ETHERS AS INITIATORS

Fritz Mietzsch, Cologne; Hans Rudolph, Krefeld; Heinrich Wolfers, Rheurdt, and Heinrich Alberts, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

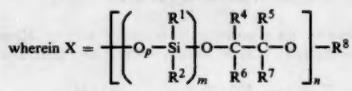
Continuation-in-part of Ser. No. 971,388, Dec. 20, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,729
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1977, 2758779
Int. Cl.[3] C08F 4/00, 10/02
U.S. Cl. 526—194 4 Claims

1. A process for the production of homopolymers or copolymers of ethylene by radical polymerisation at a temperature of at least 100° C. and under a pressure of from 200 to 3500 atms, optionally in the presence of a solvent, wherein as the initiators a silyl ether corresponding to the general formula I is used:

(I)

-continued

wherein X =



R^1 represents methyl, ethyl, phenyl, benzyl or chloromethyl;
R^2 represents chlorine, hydroxyl, methoxy, ethoxy or R^1;
R^4 and R^5 the same or different represent aryl radicals optionally substituted by C_1–C_4-alkyl, methoxy, chlorine, or fluorine;
R^6 and R^7 the same or different either have the same meaning as R^4 and R^5 or represent C_1–C_6-alkyl radicals optionally substituted by C_1–C_4-alkyl, methoxy, chlorine or fluorine, cycloalkyl radicals containing from 5 to 7 carbon atoms or hydrogen;
R^8 represents hydrogen or a silyl radical corresponding to the general formula II:

(II)

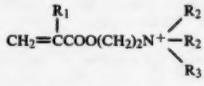
wherein
R^2 has the meaning given above; and n is an integer of from 1 to 20,
m is an integer from 1 to 10,
is 0 or 1;
R^9 represents R^1 or X
R^{10} represents R^2 or X and
R^{11} represents chlorine, hydroxyl or X.

4,251,651
AMPHOTERIC POLYELECTROLYTE

Shigenao Kawakami, Osaka; Shigeru Ura, Saitama; Naoyoshi Jinno; Shin-Ichi Isaoka, both of Osaka, and Wataru Tohoma, Saitama, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

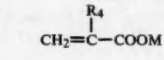
Filed May 19, 1978, Ser. No. 907,854
Claims priority, application Japan, May 31, 1977, 52-64216
Int. Cl.[3] C08F 214/00, 214/14
U.S. Cl. 526—204 8 Claims

1. An amphoteric polyelectrolyte useful as a paper additive, a flocculant or a dehydrating agent, which is obtained by copolymerizing a vinyl monomer of the formula:



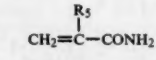
(I)

wherein R_1 is a hydrogen atom or a methyl group, R_2 and R_3 are each a methyl group or an ethyl group and X is a chlorine atom, a bromine atom or an iodine atom, a vinyl monomer of the formula:



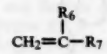
(II)

wherein M is a hydrogen atom, an alkali metal atom or an ammonium group and R_4 is a hydrogen atom or a methyl group and a vinyl monomer of the formula:



(III)

wherein R_5 is a hydrogen atom or a methyl group, optionally with a vinyl monomer of the formula:



(IV)

wherein R_6 is a hydrogen atom or a methyl group and R_7 is a phenyl group, —CN or —$COOR_8$ in which R_8 is methyl, ethyl, phenyl or —$(CH_2)_nOH$ wherein n is 2 or 3, the molar proportion of the vinyl monomers (I), (II), (III) and (IV) being 1 to 85:1 to 85:5 to 98:0 to 50, the reslting copolymer having a Brookfield viscosity of 1 poise or more when determined in a 10% by weight aqueous solution.

4,251,652

POLYETHERESTER BLOCK COPOLYMER AND PROCESS FOR PRODUCING THE SAME

Chiaki Tanaka, Chita; Yoko Furuta, and Nagayoshi Naito, both of Nagoya, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed May 29, 1979, Ser. No. 42,868

Claims priority, application Japan, Jun. 5, 1978, 53-66662

Int. Cl.³ C08G *63/66*

U.S. Cl. 528—279 **23 Claims**

1. A polyetherester block copolymer comprising:

(1) 50 to 95% by weight of polyester block segments comprising:

(A) a dicarboxylic acid component which comprises at least 70 molar percent of at least one aromatic dicarboxylic acid having a molecular weight of 300 or less and including, as an indispensable dicarboxylic acid component, at least 50 molar percent of terephthalic acid, and which is polycondensed with:

(B) a diol component which comprises at least 70 molar percent of at least one aliphatic diol having a molecular weight of 250 or less and including, as an indispensable diol component at least 50 molar percent of 1,4-butanediol,

said polyester block segments being block polycondensed with:

(2) 5 to 50% by weight of polyether block segments comprising poly(tetramethylene oxide)glycol,

characterized in that said poly(tetramethylene oxide) glycol has a number average molecular weight of from 1,500 to 2,500 and a variance (α) in molecular weight distribution, satisfying the equation (1):

$$\alpha = Mv/Mn < 1.70 \quad (1)$$

wherein Mn represents a number average molecular weight of said poly(tetramethylene oxide) glycol and Mv represents a viscosity average molecular weight of said poly(tetramethylene oxide)glycol, defined by the equation (2):

$$Mv = \text{anti log}(0.493 \log \mu + 3.0646) \quad (2)$$

wherein μ represents a melt viscosity in poise of said poly(tetramethylene oxide)glycol at a temperature of 40° C.

4,251,653

MANUFACTURE OF NYLON BY ADDING LIQUID DIAMINE TO AQUEOUS POLYAMIDE FORMING SALT SOLUTION

Albrecht Eckell, Frankenthal; Paul Matthies, Heidelberg; Georg Pilz, Neustadt, and Rudi-Heinz Rotzoll, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

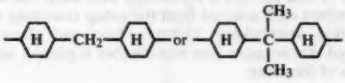
Filed Jun. 8, 1978, Ser. No. 913,748

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1977, 2728931

Int. Cl.³ C08G *69/28*

U.S. Cl. 528—335 **6 Claims**

1. In a process for the manufacture of nylon wherein an aqueous solution of a salt of an alkanedicarboxylic acid of 6 to 12 carbon atoms and a diamine of the formula NH_2RNH_2, where R is alkylene of 6 to 12 carbon atoms or is a radical



is heated to a temperature at which condensation occurs and nylon is formed, under superatmospheric pressure and with removal of water, the improvement which comprises: adding liquid diamine to the aqueous salt solution, said solution having a salt concentration of from 40 to 65% by weight and containing free alkanedicarboxylic acid, whereby the diamine neutralizes the free alkanedicarboxylic acid to form a salt solution having a concentration of from 75 to 90% by weight.

4,251,654

COPOLYETHER GLYCOLS OF TETRAHYDROFURAN AND ALKYLENE OXIDES HAVING LOW OLIGOMERIC CYCLIC ETHER CONTENT

Ivan M. Robinson, Wilmington, Del., and Engelbert Pechhold, Chadds Ford, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 887,333, Mar. 16, 1978, abandoned, and Ser. No. 967,082, Dec. 12, 1978, abandoned. This application Aug. 14, 1979, Ser. No. 67,352

Int. Cl.³ C08G *65/20, 65/30*

U.S. Cl. 528—417 **6 Claims**

1. A polymerizate containing a copolymer of tetrahydrofuran and ethylene oxide, the copolymer containing 10–80%, by weight, of ethylene oxide and having a number average molecular weight of 500–10,000 and a hydroxyl functionality of 2.0–4.0, the polymerizate containing no more than about 3%, by weight of oligomeric cyclic ethers.

4,251,655

SUBSTITUTED N-IMINOMETHYLPIPERIDINES

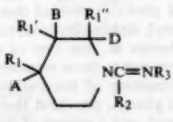
Malcolm K. Scott, and Chris R. Rasmussen, both of Ambler, Pa., assignors to McNeilab, Inc., Fort Washington, Pa.

Continuation-in-part of Ser. No. 10,209, Feb. 8, 1979, abandoned, which is a continuation-in-part of Ser. No. 891,419, Mar. 29, 1978, abandoned. This application Sep. 20, 1979, Ser. No. 77,206

Int. Cl.³ C07D *211/68, 211/70*

U.S. Cl. 542—415 **36 Claims**

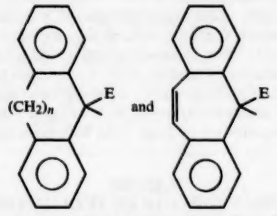
1. A member selected from the group consisting of a substituted N-iminomethylpiperidine of formula (I):



(I)

and the corresponding non-toxic acid addition salts thereof, wherein:

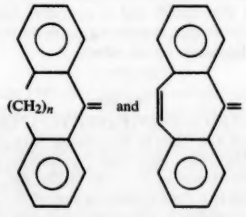
R_1 taken individually is a member selected from the group consisting of hydrogen; phenyl; phenyl substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hydroxy and halo; phenyl(C_1–C_4)loweralkyl; 1-phenyl(C_7–C_9)loweralkyl; phenyl(C_1–C_4) loweralkyl and 1-phenyl(C_7–C_9)loweralkyl in which said phenyl is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hyroxy, halo, and phenyl, provided that no more than one member is phenyl; diphenyl(C_1–C_4)loweralkyl; diphenyl(C_1–C_4)loweralkyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, halo, hydroxy, and phenyl, provided that no more than one member is phenyl; diphenylhydroxymethyl; diphenylhydroxymethyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hydroxy, halo, and phenyl, provided that no more than one member is phenyl; and radicals of formulae:



wherein n is 0, 1, or 2 and E is H or OH;

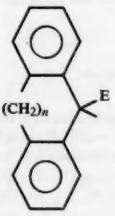
A taken individually is a member selected from hydrogen, acetyl, and phenyl, provided that when A is acetyl or phenyl, R_1 is a member selected from the group consisting of phenyl of phenyl substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hydroxy and halo;

R_1 and A taken together is a member selected from the group consisting of benzhydrylidene and radicals of formulae:



wherein n is 0, 1, or 2;

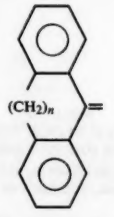
R_1' taken individually is a member selected from the group consisting of hydrogen; methyl; diphenylmethyl; diphenylmethyl wherein at least one of the phenyl groups is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hydroxy, halo; and phenyl, provided that no more than one member is phenyl; diphenylhydroxymethy; diphenylhydroxymethyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, halo, hydroxy, and phenyl, provided that no more than one member is phenyl; and a radical of formula:



wherein n is 0, 1, or 2 and E is H or OH;

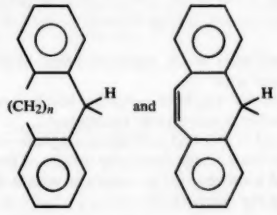
B taken individually is hydrogen;

R_1' and B taken together is a member selected from the group consisting of benzhydrylidene and a radical of formula



wherein n is 0, 1, or 2

R_1'' taken individually is a member selected from the group consisting of hydrogen, diphenylmethyl; diphenylmethyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisiting of loweralkyl, loweralkoxy, halo, hydroxy, and phenyl, provided that no more than one member is phenyl; diphenylhydroxymethyl: diphenylhydroxymethyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkoxy, hydroxy, halo, and phenyl, provided that no more than one member is phenyl; and radicals of formulae:



wherein n is 0, 1, or 2;

D taken individually is hydrogen;

R_1'' and D taken together is benzhydrylidene;

R_2 is a member selected from the group consisting of hydrogen and C_1–C_4 loweralkyl; and

R_3 is a member selected from the group consisting of hydrogen; alkyl; cycloalkyl; phenylloweralkyl; phenylloweralkyl in which said phenyl is substituted with from one to three members each selected from the group consisting of loweralkyl, loweralkyl, hydroxy, and halo; diphenyl (C_1–C_4) loweralkyl; diphenyl(C_1–C_4) loweralkyl wherein at least one of said phenyls is substituted with from one to three members each selected from the group consisting of

loweralkyl, loweralkoxy, halo, hydroxy, and phenyl, provided that no more than one member is phenyl; alkenyl; and alkynyl;

provided that at least one of said R_1, R_1', and R_1'' is other than hydrogen and further provided that when R_1'' is other than hydrogen R_1, R_1', and A are each hydrogen; when R_1' is hydrogen only one of R_1 and R_1'' is other than hydrogen; when R_1' is methyl R_1 is other than hydrogen and R_1'' is hydrogen; and when R_1' is other than hydrogen or methyl R_1, R_1'' and A are each hydrogen.

4,251,656

CATIONIC DYES

Peter Loew, Münchenstein; Rudolf Zink, Therwil, and Stefan Koller, Ramlinsburg, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

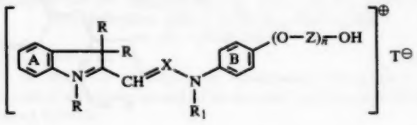
Filed Jun. 13, 1978, Ser. No. 915,328

Claims priority, application Luxembourg, Jun. 17, 1977, 77571; Sep. 30, 1977, 78217

Int. Cl.³ C07D *209/14;* C09B *23/16*

U.S. Cl. 542—417 **17 Claims**

1. A cationic dye of the formula



wherein

R independently of one another is straight or branched chain alkyl of 1 to 4 carbon atoms,

X is CH or N,

R_1 is hydrogen where X is CH; or is straight or branched chain alkyl of 1 to 6 carbon atoms where X is N,

Z is C_2H_4 which is unsubstituted or substituted by C_1–C_4 alkyl,

n is 0 or 1,

T is an anion,

the ring A is further unsubstituted or substituted by halogen, nitro, straight or branched chain alkyl of 1 to 4 carbon atoms, or straight or branched chain alkoxy of 1 to 4 carbon atoms; and the ring B is further unsubstituted or substituted by halogen or straight or branched chain alkyl of 1 to 4 carbon atoms.

4,251,657

METHOD FOR REMOVING PROTECTIVE GROUPS

Michihiko Ochiai, Suita; Akira Morimoto, Ikeda, and Toshio Miyawaki, Nishinomiya, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Dec. 5, 1978, Ser. No. 966,753

Claims priority, application Japan, Dec. 9, 1977, 52-148414

Int. Cl.³ C07D *501/36*

U.S. Cl. 544—027 **8 Claims**

1. In the method for removing the halogenoacetyl group from a compound having in the molecule a halogenoacetyl amino group XCH_2CO—NH in which X is halogen which comprises reacting the halogenoacetyl amino compound with an agent capable of effecting removal of the halogenoacetyl group, the improvement according to which the agent capable of effecting removal of the halogenoacetyl group is an N-substituted dithiocarbamic acid or an alkali metal, alkaline earth metal, ammonia or organic amine salt thereof wherein the substituent is selected from the group consisting of lower alkyl of 1 to 6 carbon atoms, cycloalkyl of 5 to 7 carbon atoms, and aralkyl of 7 to 10 carbon atoms or aryl of 6 to 10 carbon atoms the reaction being conducted in an inert solvent, at a temperature of from −20° C. to 100° C. and wherein 0.5 to 3 mol of the N-substituted dithiocarbamic acid as salt thereof are present per 1 mol of the halogenoacetyl amino compound.

4,251,658

3-(1-PYRAZOLYL)-PYRIDAZINE DERIVATIVES

Geza Szilagyi; Endre Kasztreiner; Laszlo Tardos; Edit Kosa; Laszlo Jaszlits; György Cseh; Andras Divald; Pal Tolnay; Sandor Elek; Istvan Elekes, and Istvan Polgari, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar Rt., Budapest, Hungary

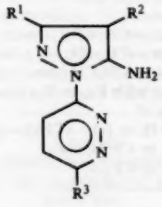
Filed Jun. 9, 1978, Ser. No. 914,084

Claims priority, application Hungary, Jun. 13, 1977, GO 1373

Int. Cl.³ C07D *403/04, 401/14, 405/14;* A61K *31/50*

U.S. Cl. 544—238 **3 Claims**

1. A compound of the formula:



wherein

R^1 is hydrogen or C_1 to C_4 alkyl;

R^2 is cyano, carboxyl, carbamoyl, carbazoyl, or C_1 to C_4 alkoxycarbonyl; and

R^3 is $—NR^4—NHR^5$ or $—NR^6R^7$ wherein

R^4 and R^5 are each independently hydrogen or C_1 to C_4 alkyl;

R^6 and R^7 are each independently hydrogen, C_1 to C_5 alkyl, C_1 to C_5 hydroxyalkyl, C_3 to C_7 cycloalkyl, phenyl, benzyl, benzyl or phenethyl substituted by one or two chlorine atoms or methoxy groups, furylmethyl, or pyridylmethyl; or

R^7 is hydrogen and R^6 is $—(CH_2)_n—NR^4R^5$ wherein n is an integer from 1 to 3;

or a pharmaceutically acceptable salt thereof.

4,251,659

POLYFLUOROHYDROXYISOPROPYL-HETEROCYCLIC COMPOUNDS

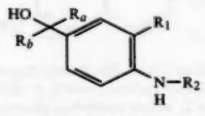
Paul E. Aldrich, Wilmington, Del., and Gilbert H. Berezin, West Chester, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 793,712, May 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 699,588, Jun. 24, 1976, abandoned. This application Dec. 22, 1977, Ser. No. 863,266

Int. Cl.³ C07D *209/08, 215/04, 223/16*

U.S. Cl. 546—102 **5 Claims**

1. A compound of the formula



where R_1+R_2, taken together, can be

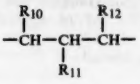
(a)

where

R_6=H or $—CH_3$;

R_7=H or $—CH_3$;

R_8=H or alkyl of 1-4 carbons;
R_9=H or alkyl of 1-4 carbons; or
R_8+R_9, taken together, can be $-(CH_2)_4-$;
provided
(i) at least one of R_6, R_7, R_8, or R_9=H; and
(ii) the sum of the carbons of R_6, R_7, R_8, and R_9 is not more than 6;


(b)

where
R_{10}=H, $-CH_3$, or $-CH_2CH_3$;
R_{11}=H, $-CH_3$, or $-CH_2CH_3$;
R_{12}=H, $-CH_3$, or $-CH_2CH_3$; or
R_{11}, taken together with R_{10} or R_{12} can be $-(CH_2)_4-$;
provided at least one of
R_{10}, R_{11}, or R_{12}=H; or (c) $-(CH_2)_4-$;
R_a is CF_3, CF_2Cl, or CF_2H; and
R_b is CF_3, CF_2Cl, or CF_2H.

4,251,660

METHOD FOR PREPARING TETRAHYDROISOQUINOLINES

Bing L. Lam, Wynnewood; Wilford L. Mendelson, King of Prussia, both of Pa., and Charles B. Spainhour, Jr., Cherry Hill, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Filed Aug. 10, 1978, Ser. No. 932,586
Int. Cl.³ C07D *217/02*
U.S. Cl. 546—150 **4 Claims**

1. The method of preparing 7,8-dichloro-1,2,3,4-tetrahydroisoquinoline hydrochloride comprising the step of reacting N-hydroxyethyl-N-2,3-dichlorobenzylamine as the base or an acid addition salt thereof with aluminum chloride in the absence of an organic solvent at a temperature selected from the range of from about 160°-210° until the reaction is complete.

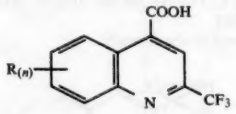
4,251,661

PREPARATION OF 2-TRIFLUOROMETHYL CINCHONINIC ACIDS

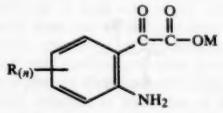
Daniel J. Quimby, Mt. Holly, N.J., assignor to Union Carbide Corporation, New York, N.Y.

Filed Sep. 26, 1979, Ser. No. 79,201
Int. Cl.³ C07D *215/50*
U.S. Cl. 546—170 **18 Claims**

1. A method of preparing 2-trifluoromethyl cinchoninic acids of the formula:



wherein R is selected from the group consisting of halogen, alkyl, aryl and alkoxy radicals, and n is an integer having a value of from 0 to 2, which comprises reacting an alkali metal 2-aminophenylglyoxylate of the formula:



wherein M is an alkali metal, and R and n are as above defined, with 1,1,1,-trifluoroacetone at a pH of no greater than 7.

4,251,662

PHENOXYPYRIDINE DERIVATIVES

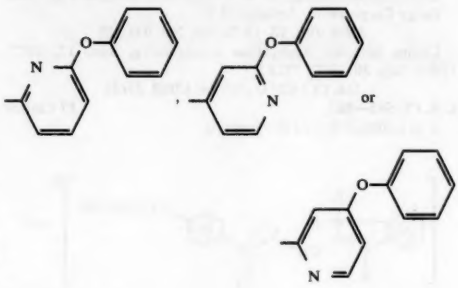
Kiyomi Ozawa; Shigeru Ishii, and Masataka Hatanaka, all of Funabashi, Japan, assignors to Nissan Chemical Industries, Limited, Tokyo, Japan

Filed Dec. 28, 1979, Ser. No. 107,937
Claims priority, application Japan, Dec. 29, 1978, 53/163083
Int. Cl.³ C07D *213/79*
U.S. Cl. 546—301 **4 Claims**

1. Phenoxypyridine derivatives having the formula

$$(CH_3COO)_nCH_{3-n}R \quad \text{(I)}$$

wherein R represents



and n is 1 or 2.

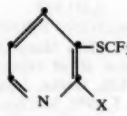
4,251,663

THIOSUBSTITUTED PYRIDINES

John J. Baldwin, and Gerald S. Ponticello, both of Lansdale, Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Division of Ser. No. 9,008, Feb. 5, 1979. This application Feb. 4, 1980, Ser. No. 118,165
Int. Cl.³ C07D *213/28*
U.S. Cl. 546—303 **2 Claims**

1. Compounds having the formula



wherein X is Br or Cl.

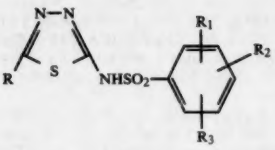
4,251,664

SULFONAMIDOTHIADIAZOLES, METAL COMPLEXES THEREOF, AND SOLUTIONS CONTAINING SUCH COMPOUNDS FOR USE IN EXTRACTION OF METAL VALUES

Ernest B. Spitzner, Minneapolis, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed May 24, 1978, Ser. No. 909,154
Int. Cl.³ C07D *285/12*; C22B *15/12, 19/20, 23/00*
U.S. Cl. 548—138 **5 Claims**

1. Compounds of the structure:



wherein R is phenyl in which R_1, R_2, and R_3, which may be the same or different, are selected from the group consisting of hydrogen and linear and branched chain alkyl containing from 1 to 20 carbon atoms, said compounds being further characterized as having solubilities of at least 2% by weight in essentially water-immiscible, liquid hydrocarbon solvents.

4,251,665

AROMATIC SULFONIC ACID OXA-AZACYCLOPENTANE ADDUCTS

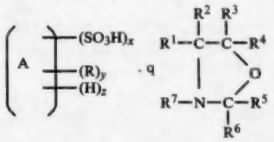
Leonard J. Calbo, Bethel, Conn., assignor to King Industries, Inc., Norwalk, Conn.

Division of Ser. No. 908,358, May 22, 1978, Pat. No. 4,200,729. This application Oct. 5, 1979, Ser. No. 82,050

Int. Cl.³ C07D *263/52*

U.S. Cl. 548—215 **9 Claims**

1. A thermally-decomposable composition comprising an oxa-azacyclopentane adduct of an aromatic sulfonic acid of the general formula:



wherein A is phenyl or naphthyl and x is a whole number of from 1 to 8, y is a whole number of from 0 to 7, the sum of x and y being no greater than 8, and z is 8−x−y when A is naphthyl and 6−x−y when A is phenyl; q is a positive number equal to or greater than about 0.5; R is alkyl, halogen, haloalkyl or alkoxy; and R^1, R^2, R^3, R^4, R^5, R^6 and R^7, independently, are hydrogen, alkyl, halogen, haloalkyl or alkoxy.

4,251,666

METHOD OF PRODUCING THIOPHENE

Mikhail G. Voronkov, ulitsa Lermontova, 315, kv. 32; Boris A. Trofimov, ulitsa Lermontova, 321ᵃ, kv. 32; both of Irkutsk; Vasily V. Krjuchkov, prospekt Lenina, 65, kv. 92, Kemerovo; Svetlana V. Amosova, ulitsa Dekabrskikh sobyty, 105"b", kv, 43, Irkutsk; Jury M. Skvortsov, ulitsa Lermontova, 315, kv. 14, Irkutsk; Anatoly N. Volkov, ulitsa Lermontova, 321ᵈ, kv. 25, Irkutsk; Anastasia G. Malkina, ulitsa Lermontova, 281, kv. 51, Irkutsk, and Roman Y. Mushy, ulitsa Lisichanskaya, 45, kv. 15, Severodonetsk, all of U.S.S.R.

Continuation of Ser. No. 897,268, Apr. 18, 1978, abandoned. This application Nov. 26, 1979, Ser. No. 97,444

Int. Cl.³ C07D *333/12*

U.S. Cl. 549—29 **9 Claims**

1. A method of producing thiophene comprising the step of reacting diacetylene with sodium sulfide in either water or a mixture of from about 50–90 parts by weight of a polar aprotic solvent selected from the group consisting of dimethylsulphoxide, hexamethylphosphortriamide and N-methylpyrrolidone and from about 50–10 parts by weight of water at a temperature of from about 20°–100° C., the water being either free water or water of hydration.

4,251,667

PROCESS FOR THE PREPARATION OF AROMATIC URETHANES

Haven S. Kesling, Jr., Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Continuation-in-part of Ser. No. 882,310, Mar. 1, 1978, abandoned, which is a continuation of Ser. No. 754,069, Dec. 27, 1976, abandoned. This application Jun. 6, 1979, Ser. No. 46,090

Int. Cl.³ C07C *125/065, 125/073*

U.S. Cl. 560—24 **16 Claims**

1. A process for the preparation of aromatic urethanes which comprises reacting at a temperature of about 60° to 300° C. and a pressure of about 1 to 700 atmospheres, an aromatic amine, an alcohol and carbon monoxide in the presence of a salt selected from copper I and copper II salts and mixtures of these, oxygen or an oxygen-containing gas present in an amount less than the minimum amount necessary to form an explosive mixture of carbon monoxide and oxygen and a dehydrating agent.

4,251,668

SUBSTANCE DESIGNED TO BE USED IN THE PRODUCTION OF ALCOHOLIC LIQUIDS AND PROCESS

Robert Leaute, Cognac, France, assignor to Seguin et Cie, France

Filed Jul. 7, 1978, Ser. No. 922,683

Claims priority, application Luxembourg, Jul. 7, 1977, 707

Int. Cl.³ C07C *69/88*

U.S. Cl. 560—69 **12 Claims**

1. A product extracted from wood for conferring to alcoholic liquids characteristics similar to those obtained in natural aging, the product comprising between about 30 and 100 mg/l of vanillin, between about 8 and 42 g/l of tannin and, between about 0.5 and 50 mg/l of 5-hydroxymethyl furfural, said product having an ultra-violet absorption spectrum showing a first maximum wavelength at about 205 nm, a second maximum wavelength at about 280 nm and a shoulder wavelength at about 225 to 230 nm.

4,251,669

ANALOGUES OF PROSTANOIC ACIDS

Gerhard Beck, Frankfurt am Main; Wilhelm Bartmann, Bad Soden; Ulrich Lerch, Hofheim, and Bernward Schökens, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

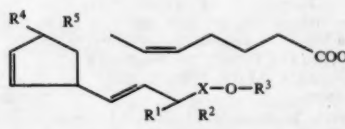
Continuation-in-part of Ser. No. 597,667, Jul. 21, 1975, abandoned. This application Jan. 19, 1978, Ser. No. 870,658

Claims priority, application Fed. Rep. of Germany, Jul. 23, 1974, 2435331

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—121 **10 Claims**

1. A compound of the formula



I

including the optically active compounds of natural configuration and racemic compounds, or a physiologically acceptable salt thereof with an organic or inorganic base, or an ester thereof formed with an aliphatic, cycloaliphatic, or araliphatic alcohol having up to 8 carbon atoms, wherein

R^1 and R^2 are different and are either hydrogen or hydroxy,

R^4 and R^5, taken alone, are different and are either hydrogen or hydroxy,

R^4 and R^5, taken together, are oxygen,

R^3 is saturated or unsaturated, straight-chain or branched, aliphatic hydrocarbon having 1-8 carbon atoms, and

X is

where n is 0,1, or 2.

4,251,670
GLYCOL POLYETHER-ACRYLIC ACID-AMINE REACTION PRODUCT FOR FUEL AND MINERAL OILS

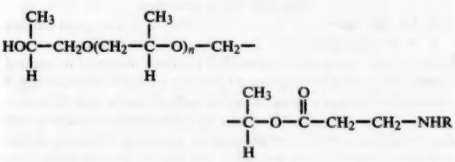
William M. Cummings, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Continuation of Ser. No. 836,890, Sep. 26, 1977. This application Aug. 13, 1979, Ser. No. 66,210

Int. Cl.³ C07C *101/24*

U.S. Cl. 560—169 **5 Claims**

1. A glycol polyether reaction product represented by the formula:



in which n is a number from about 10 to 90 and R is a monovalent hydrocarbon radical having from about 2 to 30 carbon atoms or a radical selected from the group represented by the formulas:

$$-(CH_2CH_2NH)_x-H \text{ or}$$
$$-(CH_2-CH_2-CH_2-NH)_y-H$$

in which x and y are integers from 1 to 6.

4,251,671
EXTRACTION OF CITRIC ACID

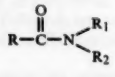
John E. Alter, Elkhart, Ind., and Ruth Blumberg, Haifa, Israel, assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Oct. 5, 1979, Ser. No. 82,078

Int. Cl.³ C07C *51/48, 59/265*

U.S. Cl. 562—580 **7 Claims**

1. A process for the extraction of citric acid from an aqueous citric acid solution which comprises contacting such solution at a temperature of 10° to 70° C. with an N-substituted alkyl amide containing a total of at least twelve carbon atoms and having the structural formula



wherein R, R_1 and R_2 may be the same or different alkyl radicals.

4,251,672
PROCESS FOR HYDROGENATING ORGANIC COMPOUNDS WITH COPRECIPITATED COPPER-NICKEL-SILICA CATALYSTS

James L. Carter, and Allan E. Barnett, both of Westfield, N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Division of Ser. No. 819,346, Jul. 27, 1977, abandoned, which is a continuation-in-part of Ser. No. 729,721, Oct. 5, 1976, abandoned, which is a continuation of Ser. No. 577,328, May 14, 1975, abandoned. This application Aug. 25, 1978, Ser. No. 936,776

Int. Cl.³ C07C *5/10, 5/02*

U.S. Cl. 568—814 **15 Claims**

1. A process for hydrogenating organic compounds which comprises contacting at least one hydrogenatable organic compound with hydrogen in the presence of a calcined and reduced coprecipitated copper-nickel-silica catalyst capable of having an active nickel surface area ranging from about 55 m^2/g to about 100 m^2/g as determined by hydrogen chemisorption, after reduction at 400° C. and a B.E.T. total surface area ranging from about 150 m^2/g to about 300 m^2/g, wherein said catalyst contains from about 2 wt. % to about 10 wt. % copper and about 25 wt. % to about 50 wt. % of nickel, said wt. % of copper and nickel being based on the total weight of the catalyst.

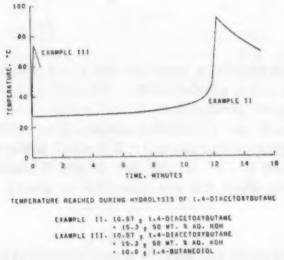
4,251,673
RAPID HYDROLYSIS OF ESTERS

Harold W. Mark, and William V. Childs, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 3, 1979, Ser. No. 54,532

Int. Cl.³ C07C *27/02, 31/18, 31/133, 31/20*

U.S. Cl. 568—858 **11 Claims**



TEMPERATURE REACHED DURING HYDROLYSIS OF 1,4-DIACETOXYBUTANE

EXAMPLE II: 10.57 g 1,4-DIACETOXYBUTANE
+ 15.3 g 50 WT. % AQ. KOH
EXAMPLE III: 10.57 g 1,4-DIACETOXYBUTANE
+ 15.3 g 50 WT. % AQ. KOH
+ 10.0 g 1,4-BUTANEDIOL

1. A process for causing the almost immediate inorganic base-catalyzed conversion at about room temperature of an organic carboxylic ester by hydrolysis of said ester to the corresponding organic hydroxyl-containing compound by adding to the reaction mass a hydrolysis reaction rate increaser and reacting said ester in said mass containing said reaction rate increaser with an inorganic base which is at least one of an alkali and alkaline earth metal hydroxide thus initiating an exothermic reaction, said hydrolysis rate increaser being present in an amount broadly 5-50 weight percent of said ester and being an organic hydroxyl-containing compound selected from materials represented by the following formulas

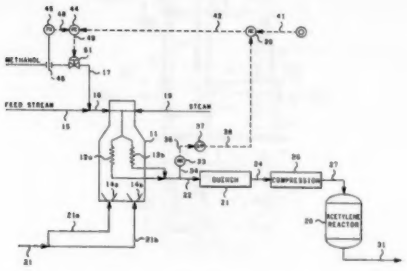
R''—OH	HO—(R'''—O)$_m$—H	HO—R''''—OH

wherein R'' can be an alkyl or alkenyl radical containing 1 to 4 carbon atoms; R''' can be any alkylene or alkenylene radical containing 1 to 4 carbon atoms; R'''' can be any alkylene or alkenylene radical containing 2 to 8 carbon atoms; and m can be 1 to about 80.

4,251,674
METHOD AND APPARATUS FOR IMPROVING THE SELECTIVITY OF A PROCESS FOR HYDROGENATING ACETYLENE TO ETHYLENE

Ricardo J. Callejas, Maracaibo, Venezuela, and John R. Mitchell, Sweeny, Tex., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 22, 1979, Ser. No. 87,272
Int. Cl.[3] C07C 5/09, 11/04
U.S. Cl. 585—272 9 Claims



7. A method for maintaining a desired concentration of carbon monoxide in the gaseous mixture flowing from a cracking furnace to an acetylene reactor comprising the steps of:

supplying a feed stream to said cracking furnace;

supplying methanol to said cracking furnace;

supplying a fuel to said cracking furnace, the combustion of said fuel supplying heat to said cracking furnace;

removing said gaseous mixture, containing the cracked components of said feed stream and containing carbon monoxide, from said cracking furnace and supplying said gaseous mixture to said acetylene reactor;

establishing a first signal representative of the concentration of carbon monoxide in said gaseous mixture;

establishing a second signal representative of the desired concentration of carbon monoxide in said gaseous mixture;

comparing said first signal and said second signal and establishing a third signal responsive to the difference between said first signal and said second signal; and

manipulating the flow rate of said methanol to said cracking furnace in response to said third signal to thereby maintain the actual concentration of said carbon monoxide in said gaseous mixture substantially equal to the desired concentration for said carbon monoxide in said gaseous mixture.

4,251,675
PREPARATION OF DIPHENYLMETHANE

Dusan J. Engel, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 15, 1979, Ser. No. 21,043
Int. Cl.[2] C07C 15/16
U.S. Cl. 585—422 1 Claim

1. In a process for the preparation of a diphenylmethane compound which comprises reacting benzene with a benzyl halide selected from the group consisting of benzyl chloride, benzyl bromide and benzyl iodide in an anhydrous reaction medium at a temperature in the range of from about 50° C. to about 150° C. and a pressure of from about 1 atmosphere to about 100 atmospheres in contact with a catalyst consisting essentially of ferric chloride, the improvement which comprises maintaining the quantity of said benzene in a molar excess of from about 10 to about 20 moles of said benzene per mole of said benzyl halide and maintaining the stoichiometric quantity of said ferric chloride in the range of from about 0.001 to about 0.003 moles of said ferric chloride per mole of said benzyl halide and from about 0.0001 to about 0.0003 moles of said ferric chloride per mole of said benzene.

4,251,676
SELECTIVE CRACKING REACTIONS BY COFEEDING ORGANIC AMINE OR AMMONIA

Margaret M. Wu, Belle Mead, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 28, 1979, Ser. No. 107,807
Int. Cl.[3] C07C 4/12
U.S. Cl. 585—486 11 Claims

1. In the process for selective cracking of 1,4-disubstituted aromatic compounds in the presence of crystalline zeolite catalysts, said zeolites being characterized by a constraint index within the approximate range of 1 to 12 and a silica to alumina mole ratio of at least 12, the improvement comprising: contacting said disubstituted aromatic compounds with said zeolite in the presence of ammonia or an organic amine.

4,251,677
PROCESS FOR OBTAINING GASEOUS STREAMS RICH IN ETHENE

Paulo H. D. A. Coutinho, and Julio A. R. Cabral, both of Rio de Janeiro, Brazil, assignors to Petroleo Brasileiro S.A. - Petrobras, Rio de Janeiro, Brazil

Filed Aug. 6, 1979, Ser. No. 64,167
Claims priority, application Brazil, Nov. 14, 1978, 7807475
Int. Cl.[3] C07C 1/00
U.S. Cl. 585—639 15 Claims

1. A process for obtaining gaseous streams containing from 18.8 percent to 64 percent by volume ethene, said process comprising the steps of

(a) admixing ethanol and hydrocarbons selected from the group consisting of gasoils and heavier petroleum cuts suitable for cracking to form a blend containing 0.13 to 50 parts by weight ethanol per 100 parts by weight of said hydrocarbons; and

(b) contacting said admixture with a granulated cracking catalyst in a fluidized bed at a temperature between 430° C. and 550° C. and under a pressure from 0 to 5 kg/cm^2 gauge to yield a gaseous stream containing from 18.8 percent to 64 percent by volume ethene.

4,251,678

ELECTRICAL MELTING APPARATUS WITH MULTIPLE ELECTRODE HOLDING ARMS

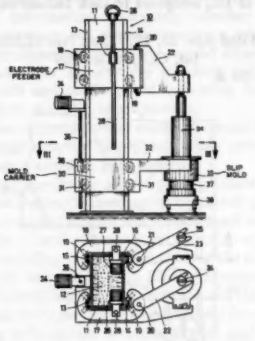
Helmut Gröf, Bruchköbel; Anton Wamser, and Uwe Reimpell, both of Hanau, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Nov. 23, 1979, Ser. No. 97,100

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1978, 2852937

Int. Cl.[3] H05B 7/10

U.S. Cl. 13—14 7 Claims



1. Electrical melting apparatus, especially for slag-shielded electrical melting, comprising at least one vertical column means, mold means, and at least two electrode holding arm means which can be alternately swung into the melting position above the mold means, each arm means being disposed on electrode feeder means which can travel independently of one another on guide means, said column means being equipped with guide means for at least two electrode feeder means, said electrode feeder means having C-shaped carriage means which encompass the column means on a partial circumference such that the electrode feeder means can be moved past one another without interference.

4,251,679

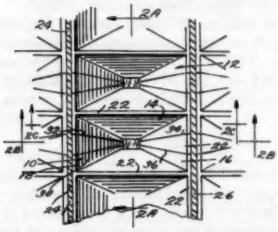
ELECTROMAGNETIC RADIATION TRANSDUCER

Bryan J. Zwan, Los Angeles, Calif., assignor to E-Cel Corporation, Houston, Tex.

Continuation of Ser. No. 907,055, May 17, 1978, abandoned. This application Mar. 16, 1979, Ser. No. 21,429

Int. Cl.[2] H01L 31/06

U.S. Cl. 136—244 27 Claims



1. A radiation transducer module comprising a body having a plurality of cavities, each cavity having a mouth and a base, an interior surface extending from said mouth to said base and surrounding a central axis, said interior surface enclosing a progressively smaller area along said axis from said mouth to said base, said interior surface being made over a major portion of its area from a material having a conduction electron density N_1, said interior surface including a strip having opposite edges each defining a potential barrier, said strip having a conduction electron density N_2, said strip extending from said mouth to said base and being in contact with said interior surface along said edges of said strip, each said strip of each cavity being connected adjacent to each said mouth to a conductor having a conduction electron density N_3, each said interior surface being connected to a conductor having a conduction electron density N_4, where:

$$N_4<N_1<N_2<N_3.$$

4,251,680

ELECTRICAL LEAD-THROUGH APPARATUS

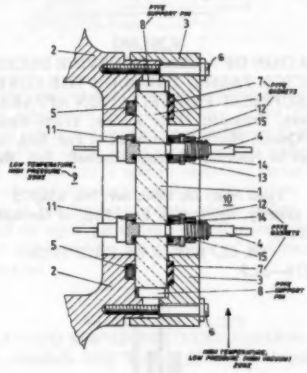
Willy Germann, Würenlos, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,867

Claims priority, application Switzerland, Jan. 25, 1978, 791/78

Int. Cl.[3] H01B 17/30

U.S. Cl. 174—18 8 Claims



1. A mounting arrangement for electrical lead-through conductors, comprising:

wall means for separating a zone of high pressure, low temperature gas from a high vacuum zone, said wall means including:

a ceramic plate having a hole therein;

at least two metallic flanges, each of which is arranged adjacent one of two opposed sides of said plate to secure said plate in position therebetween;

an electrical conductor extending through said hole in said plate;

means for securing said conductor against movement relative to said plate;

a plurality of pins arranged between said flanges about a peripheral surface of said plate, which pins are manufactured from a synthetic material; and

seal means between said flanges and said plate for sealing said high vacuum zone with respect to said zone of high pressure gas, said seal means adjacent said high vacuum zone having a larger coefficient of thermal expansion than the seal means adjacent said high pressure zone.

4,251,681

COMPRESSED GAS INSULATED HIGH VOLTAGE LINE

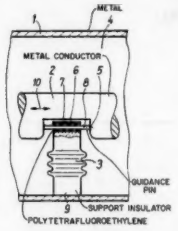
Armin Diessner, Berlin, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 27, 1978, Ser. No. 973,677

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801505

Int. Cl.[2] H01B 9/04

U.S. Cl. 174—28 8 Claims



1. A compressed gas insulated high voltage line having a metal encapsulation and a high voltage carrying conductor carried on a support insulator and axially movable relative to the encapsulation, wherein the improvement comprises one end of the support insulator being mounted for sliding movement parallel to the high voltage conductor and the encapsulation by means of two guidance pins.

4,251,682

OPERATION OF A LEAD-IN-DEVICE RECEIVING A CONDUCTOR PASSED THROUGH THE COVER OF AN ELECTRICAL PRECIPITATION APPARATUS

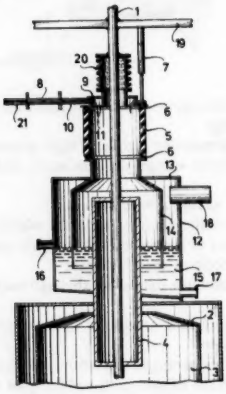
Hans Ebert, Erftstadt; Hans Kerber, Hürth-Knapsack, and Robert Queck, Hürth-Burbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 28, 1980, Ser. No. 134,775

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1979, 2913104

Int. Cl.[3] B03C 3/66; H01B 17/26

U.S. Cl. 174—31.5 7 Claims



1. A process for operating a lead-in-device receiving a conductor which passes through the cover of an electrical precipitation apparatus down to its electrode system, a portion of the conductor being encircled by an insulator which is radially spaced therefrom and of which the upper end provides support for a structural component having the conductor gastightly passed therethrough, the space inside the insulator receiving a sealing gas which is maintained under a pressure higher than that prevailing in the electrical precipitation apparatus, which comprises: using, as the sealing gas, a gas-mixture consisting of an inert gas and at least 10 volume% of methane.

4,251,683

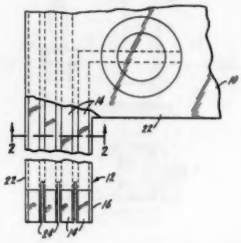
INTERCONNECT TAIL FOR A MEMBRANE SWITCH

Ray L. Oughton, Jr., Woodstock, and Willis A. Larson, Crystal Lake, both of Ill., assignors to Oak Industries, Inc., Crystal Lake, Ill.

Filed Apr. 23, 1979, Ser. No. 32,115

Int. Cl.[3] H01R 9/09

U.S. Cl. 174—74 R 11 Claims



1. A connecting tail for a switching device, said tail including a substrate having a plurality of spaced parallel silver conductors formed thereon, a portion of each silver conductor being covered by an insulating resin while another portion of each silver conductor is exposed, and means for preventing silver migration between adjacent conductors including a plurality of parallel notches, one between adjacent silver conductors, said notches extending throughout the extent of the exposed portion of the conductors and into the area of said insulating resin.

4,251,684

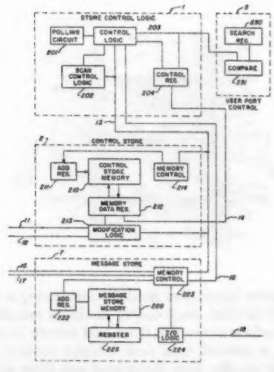
DATA STORAGE SYSTEMS

Frederick H. Rees, London, and Dan Bleicher, New Barnet, both of England, assignors to Standard Telephones and Cables Limited, London, England

Filed Nov. 13, 1978, Ser. No. 959,793

Int. Cl.[3] G06F 3/00; H04L 15/04

U.S. Cl. 178—3 6 Claims



1. A data storage system for use with a plurality of user circuits, said system comprising:

a plurality of ports associated with said plurality of user circuits for receiving and/or sending messages;

a message store having a plurality of groups of queues of message cells, each group of said plurality of groups of queues being associated with a corresponding one of said user ports, each of said message cells being adapted for storing one of said messages;

a control store having a plurality of control cells, each of said plurality of control cells being associated with a corresponding one of said message cells, each control cell being adapted to store control information relative to said corresponding message cell, said control information including information indicating whether said corresponding message cell contains message information and information identifying first and second choice user ports;

scanning means for sequentially scanning said plurality of control cells and reading said indicating information to identify busy and idle message cells;

polling means response to said scanning means identifying an idle message cell for identifying when one of said user circuits has a message to be stored;

control means responsive to said polling means identifying a user circuit having a message to be stored and said scanning means identifying an idle message cell for controlling the transfer of said message to be stored to an idle message cell and including means for amending the contents of the control cell associated with said idle message cell such that said identifying information indicates the user port for which said message cell is to be used and for changing said indicating information to indicate that said idle message cell contains message information;

said polling means being responsive to said scanning means identifying a busy message cell for addressing said first choice user port identified by said identifying information of the control cell corresponding to said identified busy message cell;

said control means including means for transferring the information in said identified busy message cell to said addressed first choice user port in response to said addressed first choice user port having a predetermined status and for modifying said control information stored in said control cell corresponding to said identified busy message cell; and

said control means being responsive to said addressed first choice user port having a second predetermined status for transferring said information in said identified busy message cell to a different one of said groups of queues, said different one of said groups of queues corresponding to the second choice user port identified by said identifying information of said control cell corresponding to said identified busy message cell.

4,251,685

REPRODUCTION OF SOUND

Peter B. Fellgett, Reading, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 222,744, Feb. 2, 1972, abandoned. This application Jan. 3, 1974, Ser. No. 430,519

Claims priority, application United Kingdom, Feb. 2, 1971, 3698/71; Nov. 9, 1971, 52008/71

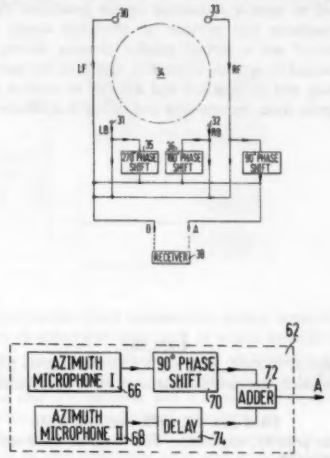
Int. Cl.³ H04S *3/02*

U.S. Cl. 179—1 GQ **5 Claims**

1. A transmitter for a multi-channel sound reproduction system for generating a plurality of audio signals each corresponding to a respective audio source at a particular azimuth with respect to a reference point and having two transmission channels, comprising:

means for forming a first signal component by adding together all the plurality of audio signals to form a sum,

phase shift means for introducing predetermined phase shifts in at least all but one of said plurality of audio signals to form a plurality of phase differing signals, one for each of the audio signals, means for combining said phase differing signals to form a second signal component, said first and second signal components being equal to each other in amplitude and frequency but differing from each other in phase in accordance with said predetermined phase shifts, said first and second signal components being coupled to the two transmission channels, the phase differences between said phase differing signals being related to and uniquely characteristic of the respective angles between the directions from which sound represented by the corresponding audio signals is intended to be heard and a predetermined reference direction, said transmitter including an integral transducer unit comprising a first transducer arranged responsive to incident soundwaves to generate a first electrical signal and a second similar transducer arranged to generate a second electrical signal equal in amplitude and frequency to that generated by said first transducer but having a phase which differs from the phase of the signal generated by the first transducer by an amount dependent on the direction of incidence of said soundwaves.



4,251,686

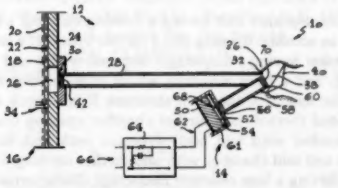
CLOSED SOUND DELIVERY SYSTEM

William G. Sokolich, 5309 Victoria Ave., Los Angeles, Calif. 90043

Filed Dec. 1, 1978, Ser. No. 965,482

Int. Cl.³ A61B *5/12*

U.S. Cl. 179—1 N **11 Claims**



1. A closed sound delivery system comprising:

a sound generating unit including a low acoustical output impedance first transducer having a diaphragm providing as a transducer output an acoustical signal corresponding to an input electrical signal, a suppressor element disposed in close proximity to the diaphragm to attenuate acousti-

cal energy generated by the transducer radially outward of a central region of the diaphragm and having a central aperture in opposed relation to the central region of the diaphragm which receives and passes acoustical signals generated by the transducer, and a first tubular element having one end connected to receive acoustical signals from the transducer through the central aperture and an opposite end adapted for engagement within an ear; and

a sound receiving unit including a second transducer coupled to receive acoustical signals generated by the first transducer and provide an electrical signal indicative thereof and a second tubular element having one end coupled to provide acoustical signals to the second transducer and an opposite end adapted to receive acoustical signals from the opposite end of the first tubular element.

4,251,687

STEREOPHONIC SOUND REPRODUCING SYSTEM

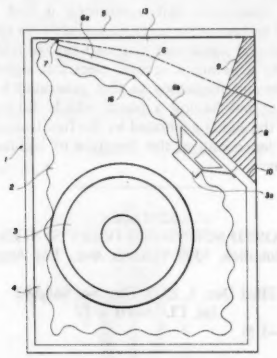
Hans Deutsch, Bergerbräuhofstrasse 34, A-5020 Salzburg, Austria

Filed Jan. 12, 1979, Ser. No. 3,314

Claims priority, application Fed. Rep. of Germany, Jan. 12, 1978, 2801227

Int. Cl.³ H04S *1/00*; H04R *1/02*

U.S. Cl. 179—1 GA **14 Claims**



1. A loudspeaker unit having a housing defining a chamber having an acoustic opening and a further opening, a low-range loudspeaker having a diaphragm disposed within said acoustic opening, and a horn structure whose cross-section increases along the length of the horn structure from a neck end to a mouth end thereof, said further chamber opening connecting said chamber with said horn structure neck end, said loudspeaker and said chamber with said further opening forming a system having a base resonant frequency, characterized in that said horn structure is a modified Helmholtz resonator having substantially the same resonant frequency as that of said system, whereby said horn structure functions as a resonator in the same manner as a cylindrical Helmholtz resonator having the same resonant frequency as said system, and said horn structure neck end functions as a low pass filter having substantially the same cut-off frequency as that of said system.

4,251,688

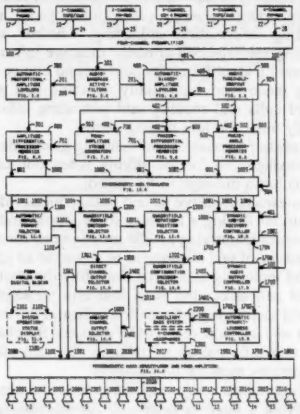
AUDIO-DIGITAL PROCESSING SYSTEM FOR DEMULTIPLEXING STEREOPHONIC/QUADRIPHONIC INPUT AUDIO SIGNALS INTO 4-TO-72 OUTPUT AUDIO SIGNALS

John A. Furner, Bellefonte, Pa., assignor to Ana Maria Furner, Bellefonte, Pa.

Filed Jan. 15, 1979, Ser. No. 3,733

Int. Cl.³ H04S *3/00, 5/02*

U.S. Cl. 179—1 GQ **22 Claims**



1. An analog-digital processing system for processing and converting analog waveform differential data from two analog signals into digital waveform differential data and for processing said digital waveform differential data into digital processed data, comprising:

a. input analog signal processor means processing said two analog signals into a plurality of conditioned analog signals having predetermined amplitude and bandwidth characteristics prepared for analog-to-digital conversion of said analog waveform differential data;

b. analog-to-digital converter means processing and converting said analog waveform differential data from any two conditioned analog signals paired from said plurality of conditioned analog signals into digital waveform differential data including, in combination to predetermined analog waveform differential data, digital phase-angle differential data, digital phasor differential data, digital amplitude differential data, digital peak amplitude strobes, and digital signal-to-noise data; and

c. digital data processor means processing said digital waveform differential data into digital processed data.

4,251,689

LOUDSPEAKER TELEPHONE APPARATUS

Richard Hastings-James, Halifax, and George W. Holbrook, Tantallon, both of Canada, assignors to Canadian Patents & Dev. Ltd., Ottawa, Canada

Filed Jul. 9, 1979, Ser. No. 55,791

Int. Cl.³ H04M *9/08*

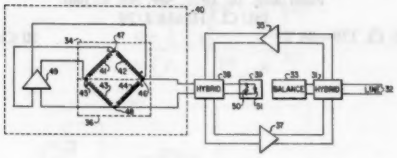
U.S. Cl. 179—1 HF **5 Claims**

5. Loudspeaker telephone apparatus for connection to a telephone line comprising:

a pair of similar electro-acoustic loudspeaker means, each of said loudspeaker means having two similar coil groups formed from coils having substantially identical resistance, inductance and mutual inductance, the coil groups in the speaker means being connected as arms in a bridge circuit such that the coil groups in the first loudspeaker means are connected in series-aiding and the coil groups in

the second loudspeaker means are connected in series-bucking;

means for connecting one of the coil groups in the second loudspeaker means to the telephone line; and



feedback amplifier means having an input means and an output means, the output means being connected across the two coil groups of each of the first and second loudspeaker means, and the input means being connected between the coil groups of each of the first and second loudspeaker means.

4,251,690

FREQUENCY-MODULATION STEREOPHONIC RECEIVER

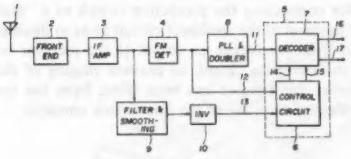
Kunihisa Takahashi, Kawagoe, and Kozo Suzuki, Saitama, both of Japan, assignors to Toko, Inc., Tokyo, Japan

Filed Jul. 23, 1979, Ser. No. 59,628

Claims priority, application Japan, Jul. 28, 1978, 53-103688[U]

Int. Cl.³ H04H *5/00*

U.S. Cl. 179—1 GM **3 Claims**



1. A frequency-modulation (FM) stereophonic receiver adapted to receive broadcast signals and having a front end circuit, an intermediate-frequency (IF) amplifier stage, an FM detector and first means for generating a train of switching pulses in synchronism with said FM detector output, comprising:

second means for producing a direct-current (DC) control signal representative of the level of said broadcast signal;

control means having a first and a second output terminals and receptive of both said DC control signal and said FM detector output for allowing said FM detector output to develop at said second output terminal at all times, and controlling the intensity of said FM detector output developing at said first output terminal, between zero and the value equal to the intensity of said FM detector output at said first output terminal, in response to the magnitude of said DC control signal, and maintaining the DC potential at both said first and second output terminals at a constant level irrespective of the magnitude of said DC control signal; and

switching means having a first and a second input terminals connected to said first and second output terminals respectively and receptive of said switching pulses for demodulating said FM detector output received from one or both of said first and second output terminals into stereophonic or monophonic signals in response to said switching pulses.

4,251,691

PICTURE/AUDIO SIGNAL TRANSMISSION SYSTEM

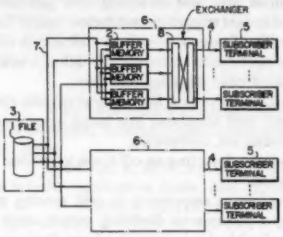
Hideto Kakihara, Higashiyamato; Kenichi Hiratsuka, Urawa; Yoji Shibata, and Wataru Kosuge, both of Yokohama, all of Japan, assignors to Nippon Telegraph and Telephone Public Corporation and Hitachi, Ltd., both of, Japan

Filed Dec. 1, 1978, Ser. No. 965,602

Claims priority, application Japan, Dec. 2, 1977, 52-143968

Int. Cl.³ H04M *11/00*

U.S. Cl. 179—2 TV **4 Claims**



1. A picture/audio signal transmission system comprising:

a plurality of subscriber units each of which includes a TV receiver, a converter for converting an analog baseband TV signal into a standard TV signal which is to be supplied to said TV receiver and a terminal controller for generating a calling signal and a request;

a plurality of sub-centers each accommodating thereto a plurality of said subscriber units and each of which includes an exchanger responsive to the calling signal from said subscriber units accommodated and a picture and audio buffer memory means for recording a signal of analog baseband TV signal form and reproducing the signal recorded in analog baseband TV signal form, said subscriber units being connected to the corresponding accommodated one of said sub-centers by respective repeater lines; and

a center including a plurality of picture and audio files, a central processing unit for controlling said files in accordance with the requests from said subscriber units and operatingly transmitting signals of analog baseband TV signal form in compliance with the requests, to said sub-centers in request respective separate transmission paths for picture, audio and control signals being formed between said center and sub-centers respectively, said file and said buffer memory means being connected by said transmission path.

4,251,692

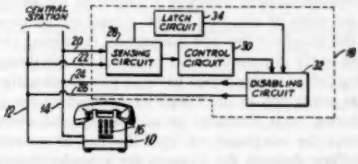
TELEPHONE CALL RESTRICTING APPARATUS

Herbert H. Waldman, 1739 52nd St., Brooklyn, N.Y. 11204

Filed Oct. 6, 1978, Ser. No. 949,014

Int. Cl.³ H04M *3/38*

U.S. Cl. 179—18 DA **42 Claims**



1. An apparatus for restricting the type of calls placed on a

telephone line said telephone line being associated with at least one telephone set, comprising:

timing means coupled across the telephone line and responsive to an off-hook condition to begin a timing cycle during which all calls can be placed onto the telephone line;

trigger circuit means responsive to a pre-determined time reached in said timing cycle and producing an output thereafter; and

call disabling means for establishing a disabling condition on the telephone line, and including tone generator means responsive to said trigger circuit means output for producing a specified frequency onto the telephone line, which frequency operates to automatically defeat a selected type of call placed onto the telephone line.

29. An apparatus for restricting the type of calls placed onto a telephone line, said telephone line being associated with at least one telephone set, comprising:

sensing means for detecting an off-hook telephone line voltage condition,

call disabling means responsive to said sensing means for producing a continuous disabling output onto the telephone line for blocking entering of any digits on the telephone line, and

inhibiting means for providing at spaced intervals enabling signals which inhibit said call disabling means during each of said intervals permitting a respective digit to be entered onto the telephone line, the number of enabling signals being equal to the number of digits of a telephone number which can be entered without restriction.

4,251,693

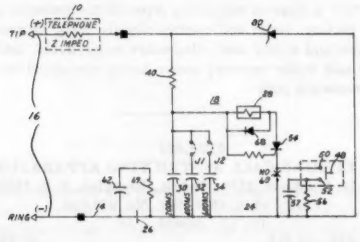
FIXED IMPULSE GENERATOR FOR HOOK SWITCH FLASH

Gary F. Christiansen, 4385 Xavier St., Denver, Colo. 80212

Filed Aug. 3, 1978, Ser. No. 930,571

Int. Cl.³ H04M *1/00*

U.S. Cl. 179—81 R **7 Claims**



6. A method of providing a predetermined hook switch flash in a telephone system including a telephone set which comprises the steps of charging an RC timing circuit connected across the telephone line and discharging the timing circuit in response to the closure of a user operated switch through the actuating coil of a relay means having a pair of normally closed contacts positioned in the telephone line which are latched open during such discharge to completely and electrically disconnect the telephone set from the line to provide zero current flow through the contacts for a predetermined time interval so that the central office can identify the interval as a hook switch flash.

4,251,694

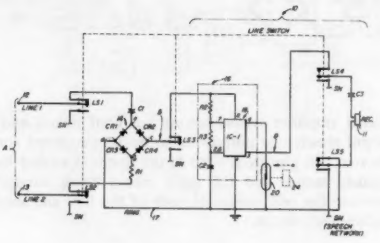
TONE-RINGING CIRCUITS AND METHODS FOR TELEPHONE SETS

Raymond G. Taylor, Shreveport, La., assignor to Western Electric Company, Inc., New York, N.Y.

Filed Aug. 16, 1979, Ser. No. 67,080

Int. Cl.³ H04M *1/26*

U.S. Cl. 179—84 T **10 Claims**



1. In combination with a tone-ringing circuit for a telephone set of the type wherein, in the on-hook state of a set of line-switch contacts, an incoming low-frequency ringing signal from the central office is rectified and applied to an oscillator circuit having a relatively high-frequency output which is connected to the receiver of the telephone handset to operate the receiver as the transducer for the tone ringer, the improvement which comprises:

a protective switch, responsive to the physical presence of the handset in the cradle independent of the state of the line-switch contacts, which closes when the handset is lifted from the cradle; and

means for connecting the protective switch to a "disable" input terminal of the oscillator circuit so as to disable that circuit from producing an output to the receiver whenever the switch is closed, to prevent ringing of the set whenever the handset has been lifted from the cradle, regardless of the state of the line-switch contacts.

4,251,695

PICKUP CARTRIDGE HAVING MEANS FOR PRODUCING MAGNETIC FIELDS OF OPPOSITE DIRECTIONS FOR COIL PLATE

Tsuyoshi Ono, Yamato; Norio Shibata, Sagamihara; Katsuhiko Oguri, Fujisawa; Masayoshi Uchida, Yokohama; Kazuhiro Sato, Sagamihara, and Hidetoshi Sato, Yamato, all of Japan, assignors to Victor Company of Japan Ltd., Yokohama, Japan

Filed Oct. 20, 1978, Ser. No. 954,296

Claims priority, application Japan, Oct. 24, 1977, 52-126717; Nov. 9, 1977, 52-134380

Int. Cl.³ H04R *9/16*

U.S. Cl. 369—136 **4 Claims**

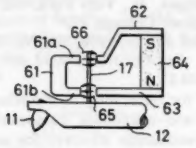
4. A moving-coil type pickup cartridge comprising:

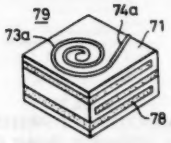
a vibration system including a stylus for tracing a sound groove of a record disc;

at least one coil plate comprising a laminated coil plate of which thin insulating base plate formed with a plurality of coil patterns is bent and folded in such a manner that the coil patterns are piled up, said coil plate being fixed to the vibration system so as to vibrate in response to vibration of the stylus; and

magnetic means including a gap in which the coil plate vibrates, said magnetic means producing magnetic fields, one of said magnetic fields being produced to pass in one

direction through one half of the coil in the vibration direction thereof, the other of said magnetic fields being





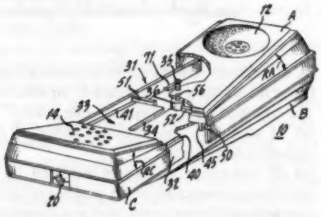
produced to pass in the opposite direction through the remaining half of the coil.

4,251,696

COMPACT TELESCOPING TELEPHONE SET

William G. MacKenzie, and James T. Asaki, both of Middletown, N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Aug. 22, 1979, Ser. No. 68,777
Int. Cl.³ H04M *1/02, 1/03*
U.S. Cl. 179—103 **24 Claims**



1. A compact, telescoping telephone instrument, comprising:

a first composite housing configuration having an internal hollow, said housing having a top surface recess containing a dialer mechanism for initiating telephone calls, a bottom surface at a given angle with respect to said top surface with a plurality of apertures on said bottom surface, a telephone audio component located in said hollow and having a surface communicating with said apertures, said housing having an opened front end, a closed back end and closed side surfaces,

a first guide means located on the opposite side of said top surface and within said hollow and relatively parallel to said side ends to provide a first path for guiding a slide member from said opened front end towards said back wall, second guide means located on the opposite side of said bottom surface and within said hollow for providing a second path in the same direction as said first path for guiding a slide member from said opened front end towards said back wall,

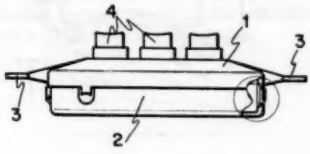
a slidable housing member comprising a first hollow section at a first end for containing within said hollow another telephone component, said housing having a right and a left slide member extending from said first section at a second end with said members relatively parallel one to the other and platform means positioned between said members to align and position the same, each of said members having a top surface configuration adapted to coact with said guide means to enable said slidable housing to move towards said back wall of said first housing, and said members further having a bottom surface configuration coacting with said second guide means to further enable said slidable housing to move in the same direction, whereby said slide members as coacting with said first and second guide means permits said slidable housings to slide towards and away from said back wall to thereby cause said another telephone component to be positioned closer to or further away from said dialer according to the movement of said slidable housing.

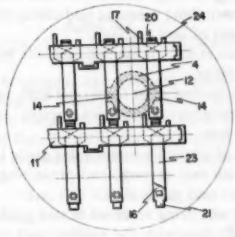
4,251,697

KEYPAD FOR TELEPHONES

Cesar Rico Gonzalez, Madrid, Spain, assignor to Amper, S.A., Madrid, Spain

Filed Jan. 8, 1979, Ser. No. 1,784
Claims priority, application Spain, Jan. 27, 1978, 233.588[U]
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **10 Claims**





1. A keypad for use in telephones or the like, said keypad comprising:

a casing made up of a top half casing and a bottom half casing and said top half casing having a plurality of openings therein, said top and bottom half casings having fastening means for being fastened to each other in a dust-proof manner;

a base substrate mounted within said casing;

a plurality of keys, each key of said plurality of keys extending respectively and being guided through corresponding ones of said plurality of openings in said top half casing, said base substrate having a plurality of contacts thereon and each of said keys being for closing two respective pairs of contacts of said plurality of contacts;

modular support means for supporting corresponding pairs of said contacts on said base substrate, said modular support means being made up of two modular elements which are fastened together for specifically positioning said corresponding pairs of such said contacts, and each of said keys having corresponding two protuberances extending from the base of said keys for closing two respective pairs of said contacts when said keys are actuated by being depressed; and

elastic restoring means which act against said substrate for

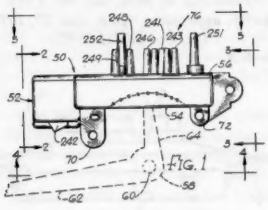
causing said keys to return to an idle position after said keys have been depressed and thereby allowing opening of said corresponding pairs contacts.

4,251,698

ELECTRICAL AND FLUID CONTROL SWITCHES

Andrew F. Raab, Morton Grove, and Raymond T. Halstead, Wheeling, both of Ill., assignors to Indak Manufacturing Corp., Northbrook, Ill.

Filed Apr. 6, 1978, Ser. No. 893,831
Int. Cl.³ H01H *9/00, 15/00*
U.S. Cl. 200—61.86 **2 Claims**



1. An electrical and fluid power control switch, comprising
a casing,
an operating carriage movable in said casing,
electrical switching means in said casing and operable by the movement of said carriage,
valve means in said casing and operable by the movement of said carriage,
said casing having a flat front wall with an elongated generally rectangular guide slot therein extending along a straight line,
and a pair of generally rectangular guide tabs formed in one piece with said carriage and projecting forwardly therefrom into said guide slot,
said guide tabs being received in said guide slot with a close sliding fit therewith for guiding said carriage and maintaining said carriage in alignment with said guide slot along a predetermined linear path in said casing,
said carriage having a gap between said guide tabs for receiving an operating member,
said carriage having a recess therein aligned with said gap for receiving the operating member,
said front wall of said casing being formed with a notch along said guide slot and constituting a widened portion thereof to facilitate the entry of the operating member into said gap,
said carriage having a rear side with a series of detent recesses therein alternating with detent bumps and distributed in a longitudinal direction parallel with the path of movement of said carriage,
said switch including a detent ball for engaging said detent recesses and bumps,
said casing having a rear wall with a post projecting rearwardly therefrom and formed in one piece therewith,
said casing having a bore therein extending through said rear wall and into said post for receiving and guiding said detent ball,
and a compression coil spring compressed in said bore behind said detent ball for biasing said detent ball against said detent recesses and bumps on said carriage.

4,251,699

ARC EXTINGUISHING MATERIAL COMPRISING DICYANDIAMIDE

Bernard M. Wiltgen, Jr., Villa Park, Ill., assignor to S & C Electric Company, Chicago, Ill.

Filed Jul. 26, 1976, Ser. No. 708,548
Int. Cl.³ H01H *9/32, 33/22*
U.S. Cl. 200—144 C **26 Claims**

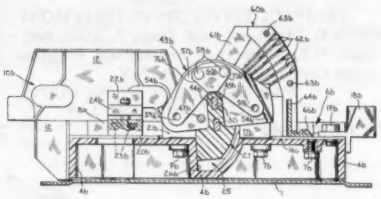
5. A method for quenching an electrical arc consisting of positioning an arc quenching composition comprising an amount of dicyandiamide effective for arc quenching sufficiently near the arc so that the heat of the arc causes a sufficient quantity of deionizing and extinguishing gas to be emitted from the composition and effectively terminate the arc.

4,251,700

DISCONNECT SWITCH

Albert A. Zaffrann, Milwaukee; Robert E. Borchardt, Brown Deer, and Frank A. Grabarczyk, Milwaukee, all of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Mar. 9, 1978, Ser. No. 884,888
Int. Cl.³ H01H *33/12*
U.S. Cl. 200—146 R **12 Claims**

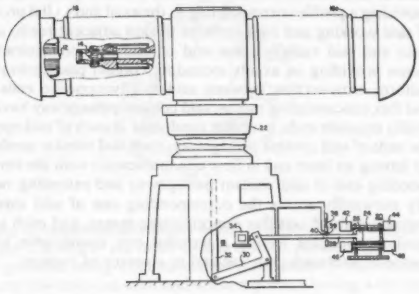


1. A disconnect switch, the combination comprising:
a frame including a base formed of an electrically insulating material and a pair of spaced side walls;
a set of stationary line contacts mounted on said base in side-by-side relation;
a set of stationary connectors mounted on said base, said stationary connectors being positioned along a horizontal axis and each being positioned in a common vertical plane with an associated one of said stationary line contacts;
a crossbar having a contact carrying portion which extends across the width of the disconnect switch along a longitudinal axis which is substantially parallel to and spaced from said horizontal axis and having a pair of arms, one attached to each end of the contact carrying portion and extending laterally therefrom, each of said arms being rotatably fastened to one of said pair of spaced side walls at a point along side horizontal axis to enable said contact carrying portion to swing about said horizontal axis.
a set of contact support members formed on said crossbar and spaced along its contact carrying portion with one in each of said vertical planes;
a set of movable contact assemblies, one mounted to each of said contact support members on said crossbar, each movable contact assembly having a contact blade with an inner end which extends through said horizontal axis and makes continuous, sliding electrical contact with one of said stationary connectors, and an outer end which extends from said horizontal axis,
wherein said crossbar is rotatable between a closed position in which the outer ends of said contact blades make electrical contact with the stationary line contacts and an opened position in which they are spaced apart.

4,251,701
CIRCUIT INTERRUPTER

Thomas N. Meyer, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 762,543, Jan. 26, 1977, abandoned. This application Feb. 23, 1978, Ser. No. 880,268
Int. Cl.[3] H01H *33/88*
U.S. Cl. 200—148 A 16 Claims



8. A compressed gas puffer-type circuit interrupter comprising, in combination:

(a) means defining a gas-compressing piston part;

(b) means defining a gas-compressing cylinder part;

(c) means defining a relatively stationary contact;

(d) means defining a cooperable relatively-movable contact cooperable with said relatively stationary contact to establish an arc therebetween during the opening operation of the puffer-type circuit interrupter;

(e) means defining a hollow movable orifice member to assist in directing compressed gas against said established arc;

(f) means attaching said hollow movable orifice member and also said relatively movable contact with one of said gas-compressing parts;

(g) operating means utilizing ignition means for operating said compressed gas puffer-type circuit interrupter and thereby effecting relative motion between said two gas-compressing parts for thereby compressing gas therebetween and thus forcing said compressed gas through said hollow movable orifice and into engagement with the established arc to quickly effect the latter's extinction; and

(h) the operating means comprising a cylinder-piston mechanism with rotatable means at each end of the cylinder and having a plurality of spaced chambers communicative with the cylinder chamber and containing the combustible propellant.

4,251,702
CIRCUIT BREAKER HAVING MULTIPLE SPRING ACTUATING MECHANISMS

Roger N. Castonguay, Terryville, and Charles L. Jencks, Avon, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jun. 25, 1979, Ser. No. 52,276
Int. Cl.[3] H01H *5/10*
U.S. Cl. 200—153 SC 21 Claims

1. A circuit breaker comprising, in combination:

A. a contact operating mechanism including

(1) at least one movable contact arm,

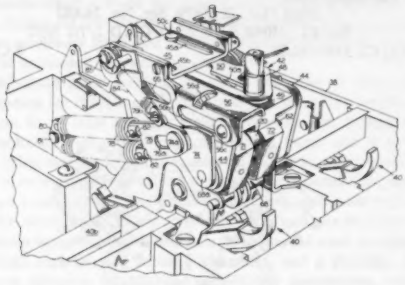
(2) a mechanism spring coupled with said contact arm and operative when charged to drive said contact arm to a closed position, said mechanism spring, upon discharging, driving said contact arm to an open position;

B. a charging mechanism including

(1) means coupling said charging mechanism with said contact operating mechanism,

(2) a charging spring connected with said coupling means and capable of being charged, upon subsequent discharge thereof, said coupling means being driven through a contact operating mechanism charging cycle pursuant to charging said mechanism spring, and

(3) prop means controllably positioned by said contact operating mechanism to permit discharge of said charging



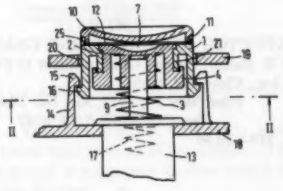
spring when said contact arm assumes its open position and to prevent discharge of said charging spring when said contact arm is in its closed position; and

C. circuit breaker operator means coupled with said charging mechanism to charge said charging spring.

4,251,703
PUSHBUTTON FOR USE WITH PUSHBUTTON SWITCHES

Siegfried Hoeft, Ditzingen, and Gerhard Klause, Renningen, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 25, 1979, Ser. No. 88,258
Claims priority, application Fed. Rep. of Germany, Nov. 10, 1978, 2848741
Int. Cl.[3] H01H *3/12*
U.S. Cl. 200—340 16 Claims

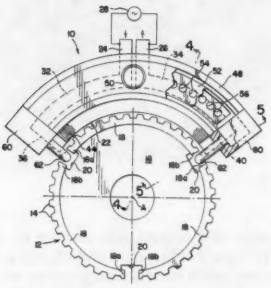


1. A pushbutton for a pushbutton switch comprising an actuating push rod; an energy-storing device for resetting, said pushbutton being held enagagingly in position with detent members moulded thereto to provide a resetting position; and wherein said pushbutton includes at least one latch member insertable from the top side such that space is provided below said latch member for receiving a second energy-storing device, said pushbutton further including a hole therethrough for receiving said second energy-storing device from above said switch without removing said pushbutton, said second energy-storing device being compressed and retained by said latch member and supported by said pushbutton switch.

4,251,704
UNIT FOR INDUCTION HEATING AND HARDENING GEAR TEETH

James R. Masie, Cleveland, and James J. Snyder, Sagamore Hills, both of Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Mar. 28, 1979, Ser. No. 24,683
Int. Cl.[3] H05B 6/14, 6/40; C21D 1/10, 9/32
U.S. Cl. 219—10.59 8 Claims

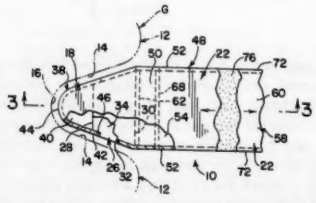


1. An induction heating unit for inductively heating a peripheral segment of teeth on circumferentially extending flange means of a gear having an axis and which flange means has a radial thickness and an axial length greater than said thickness, said heating being axially progressive along said flange means by relative axial scanning displacement between said flange means and heating unit, said unit including an inductor comprising a tubular conductor having opposite ends connectable to a source of power, said inductor including first and second leg portions between said opposite ends, said first leg portion having a circumferential contour and length to inductively heat said peripheral segment of teeth when disposed in magnetically coupled relationship with said flange means, and said second leg portion being axially and radially offset with respect to said first leg portion, said radial offset providing for said second leg portion to be in magnetically decoupled relationship with said flange means when said first leg portion is disposed in magnetically coupled relationship therewith, said axial offset being in the direction to provide for said second leg portion to trail said first leg portion with regard to the direction of axial heating, and means for directing a quenching liquid between said first and second leg portions and radially toward said flange means.

4,251,705
INDUCTOR FOR HARDENING GEAR TEETH

Norbert R. Balzer, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed May 14, 1979, Ser. No. 38,494
Int. Cl.[3] H05B 6/14, 6/42
U.S. Cl. 219—10.59 3 Claims

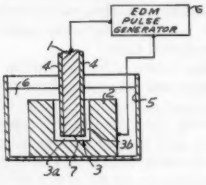


1. An inductor for inductively heating the circumferentially opposed working surfaces of adjacent gear teeth and the radially outwardly facing root surface therebetween, said inductor including flux concentrating means having circumferentially opposite sides, planar and parallel axially opposite ends and planar and parallel radially inner and outer ends, an axially extending generally V-shaped plate of conductive material having radially outer ends attached to said circumferentially opposite sides of said flux concentrating means and an apex spaced radially inwardly of and parallel to said inner end of said flux concentrating means, said circumferentially opposite sides of said flux concentrating means and said plate together providing a profile corresponding to the axial and radial profile of said working and root surfaces of said adjacent teeth, said plate and said radially inner end of said flux concentrating means providing an axially extending coolant passageway of uniform cross-section between said axially opposite ends of said flux concentrating means, said coolant passageway having axially opposite ends, a tubular conductor at each of said opposite ends of said coolant passageway, each said tubular conductor having an inner end in flow communication with the corresponding end of said coolant passageway and extending radially outwardly across the corresponding one of said axially opposite ends of said flux concentrating means, and each said tubular conductor having a terminal end connectable to a source of alternating current and to a source of coolant.

4,251,706
ELECTRODE TOOL FOR EDM AND METHOD FOR UTILIZING SUCH ELECTRODE TOOL

Charles Frei, and Jean Pfau, both of Geneva, Switzerland, assignors to Ateliers des Charmilles, S.A., Geneva, Switzerland

Filed May 21, 1979, Ser. No. 40,679
Claims priority, application Switzerland, Jun. 1, 1978, 5998/78
Int. Cl.[3] B23P 1/16
U.S. Cl. 219—69 D 12 Claims



1. A method for EDM machining an electrode workpiece by means of an electrode tool, said method comprising introducing into the machining zone between said electrodes an EDM machining fluid contaminated as a result of having been used previously for machining an element containing at least one metal having a low vaporization coefficient.

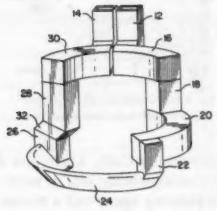
4,251,707
INDUCTOR FOR AXIALLY AND CIRCUMFERENTIALLY HEATING A ROTATING WORKPIECE

James J. Pusateri, and James R. Masie, both of Cleveland, Ohio, assignors to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Aug. 9, 1979, Ser. No. 65,082
Int. Cl.[3] H05B 6/36
U.S. Cl. 219—10.79 16 Claims

1. An inductor for inductively heating a rotating workpiece having an axis and external axial surface areas of different radial dimension, said inductor having an axis coaxial with said workpiece axis, terminal ends connectable across a source of alternating current, and a plurality of inductor portions electrically connected in series between said terminal ends, each said inductor portion corresponding to a different one of said external surface areas of said workpiece and being radially spaced from said inductor axis for magnetic coupling with the corre

sponding external surface area, said inductor portions incuding at least two circumferentially extending arcuate inductor portions each having first and second ends with respect to the direction from one of said terminal ends toward the other terminal end, the second end of one of said arcuate portions



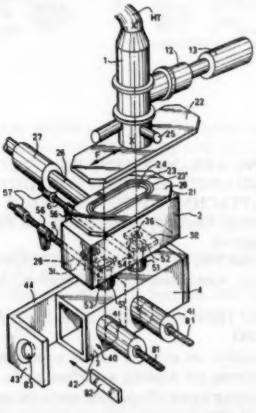
being circumferentially adjacent and axially offset with respect to the first end of the other of said arcuate portions, said arcuate portions being circumferentially progressive with respect to one another, and each said arcuate portion having a circumferential extent less than 360°.

4,251,708

METHOD AND APPARATUS FOR ELECTRON BEAM WELDING

Francois Corcelle, Thoiry, and Jean M. Comane, Parthenay, both of France, assignors to La Soudure Autogene Francaise; Commissariat a l'Energie Atomique; L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude and Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques, all of Paris, France

Filed Sep. 18, 1978, Ser. No. 943,149
Int. Cl.[2] B23K *15/00*
U.S. Cl. 219—121 EM **10 Claims**



1. Electron beam vacuum welding process making use of a single electron gun maintained under a high vacuum and suited to being displaced between at least two positions separated in space and opposite welding chambers, and also making use of a vacuum pre-enclosure maintained nearly fulltime under a welding vacuum and periodically receiving the electron gun in such a fashion that the electron beam penetrates through the vacuum pre-enclosure and into one of said welding chambers, comprising the steps of displacing the electron gun from one of said positions to another of said positions, and at each of said positions carrying out the following operations in succession; loading a welding chamber with parts to be welded, sealing the thus loaded welding chamber, opening the loaded welding chamber to said pre-enclosure, to thereby reduce the pressure inside said welding chamber until it has attained a normal welding vacuum, placing said pre-enclosure in communication with the gun, directing a welding beam from the gun through the pre-enclosure toward said loaded welding chamber, thereafter closing off the electron gun from the pre-enclosure and the pre-enclosure from said welding chamber, and then opening and unloading the welding chamber.

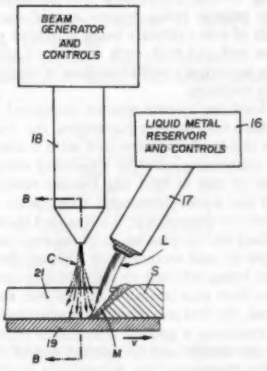
4. Electron beam welding apparatus including an electron gun, means for displacing the electron gun from one welding position to at least another welding position, an elongated pre-enclosure including a pair of opposed faces, one of said faces being disposed opposite and next to the gun and having an oval hole around which the means of displacement for said gun are mounted, multiple welding chambers positioned opposite the other face of said pre-enclosure, said pre-enclosure communicating both with said gun through said oval opening, and with each of said welding chambers, and a plurality of separate pumping mechanisms respectively cooperating with the welding gun and with said pre-enclosure to selectively evacuate the same.

4,251,709

PROCESS FOR JOINING METALS

Berthold W. Schumacher, 24635 Winona, Dearborn, Mich. 48124

Filed Dec. 29, 1978, Ser. No. 974,306
Int. Cl.[3] B23K *15/00*
U.S. Cl. 219—121 ED **8 Claims**



1. A process for joining metal parts which comprises the following steps:

(a) directing a radiation beam of sufficiently high power density to cause rapid melting of the surfaces of the metal parts to be joined at an impact location which lies at an intended joint line and

(b) moving said beam impact location along the line of the joint with a sufficiently high speed so that only a thin surface layer of the parts to be joined is being melted,

(c) directing a jet of molten metal, coming from a reservoir where said metal has been previously melted, at a point of the joint line immediately behind the beam impact location, said point of the surface being still in the molten state,

(d) letting the liquid metals of the surface layers and of the metal jet intermix,

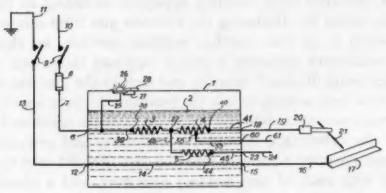
(e) adjusting the flow of the metal jet to fill any gaps in the joint structure, and

(f) letting this liquid metal mixture solidify by spontaneous cooling to form a solid metal connection between the parts subjected to this process.

4,251,710
RESISTOR TYPE ARC WELDING MACHINE

David Ortega-Aguirre, Ave. de los 100 Metros No. 597, and Carlos Michan-Verde, Paseo del Cantril No. 51, Casa 2, both of Mexico City, Mexico

Filed Mar. 9, 1979, Ser. No. 19,231
Int. Cl.[3] B23K *9/10*
U.S. Cl. 219—130.1 5 Claims



1. A resistor type arc welding machine comprising, in combination:

(a) a housing capable of containing water at a suitable level;

(b) a pair of serially connected main resistors, the free end of the first main resistor being provided with a connector for supplying current thereto from a single-phase alternating current source, and the free end of the second main resistor being provided with a connector for receiving the connecting cable of a welding electrode holder;

(c) a perforate hollow support for housing said main resistors and comprising first and second insulating cylinders arranged in a side-by-side relationship, the first main resistor being housed within said first cylinder and the second main resistor being housed in said second cylinder, the walls of said cylinders being provided with a plurality of holes and and both ends of each of said cylinders being open to permit an efficient flow of cooling water past said main resistors;

(d) at least one by-pass resistor connected to the point intermediate said two main resistors, the free end of said by-pass resistor being provided with a connector to receive the connecting cable of a welding electrode holder, the value of said at least one by-pass resistor being selected such that a predetermined current drain is obtained at said connector provided at the free end thereof;

(e) at least one by-pass tap at an intermediate point along the length of said second main resistor, the position of said point being selected to provide a predetermined current drain from said second main resistor; and

(f) a lead, the first end of which is provided with a connector for receiving a ground connection from said alternating current source, and the second end of which is provided with a connector for receiving a cable connecting the work piece thereto;

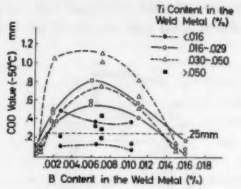
the level of said water in said housing being such as to completely submerge said perforate support and resistors in order to produce a convection stream to thereby efficiently cool said resistors.

4,251,711
LOW-HYDROGEN COATED ELECTRODE

Takashi Tanigaki, Yokohama; Takeshi Koshio, Chigasaki, and Motohiro Otawa, Yokohama, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,630
Claims priority, application Japan, Feb. 25, 1978, 53/20396
Int. Cl.[3] B23K *35/30*
U.S. Cl. 219—146.24 3 Claims

1. A coated electrode for arc welding comprising a core wire of carbon steel and coating composition coated on the core wire, said coating composition comprising 2 to 12% calculated as TiO_2 of a titanium oxide, 0.2 to 8% of at least one selected from the group consisting of Ti, Al and Mg, 0.2 to 2% calculated as B_2O_3 of a boron oxide or boron oxide compound, 40 to 60% of at least one selected from the group consisting of $CaCO_3$, $MgCO_3$ and $BaCO_3$, 15 to 30% of at least one selected



from the group consisting of CaF_2, MgF_2 and AlF_3, 1 to 4.8% Si, 3 to 9% Mn, the balance being one or more of a slag forming agent, an arc stabilizing agent and a binder.

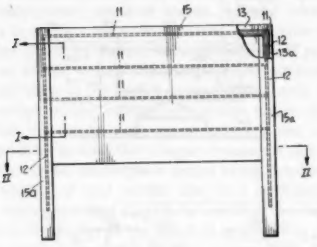
4,251,712
PACKAGING ARRANGEMENT FOR ELECTRICAL HEATING UNITS ADAPTED FOR ADHESIVE ATTACHMENT TO A SURFACE

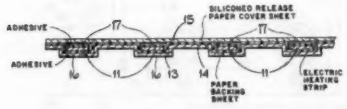
David Parr, Surrey, England, assignor to David Parr & Associates Ltd., England

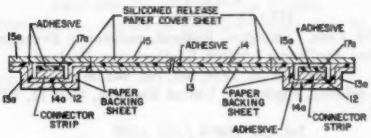
Filed Feb. 7, 1978, Ser. No. 875,924
Claims priority, application United Kingdom, Jun. 23, 1977, 26298/77
Int. Cl.[3] H05B *3/26;* B32B *7/06;* E06B *7/12*
U.S. Cl. 219—203 11 Claims

1. In combination, an electric heater comprising generally planar heater means for heating a surface to be heated, said heater means having a pair of opposite surfaces, and first adhesive means, said first adhesive means having an unexposed adhesive surface attached to one surface of said pair of opposite surfaces of said heater means and an exposed adhesive surface opposite said unexposed adhesive surface, for adhesively attaching said heater means to a surface to be heated; and a package enclosing said electric heater, said package including supporting means underlying the other of said pair of opposite surfaces of said heater means for supporting said heater means, covering means for covering said exposed adhesive surface of said first adhesive means, second adhesive means on said supporting means for removably and adhesively attaching said supporting means to said covering means and to said other surface of said heater means, and spacing means on at least one of said covering means and supporting means for

spacing said exposed adhesive surface of said first adhesive means a distance from said covering means, said distance being







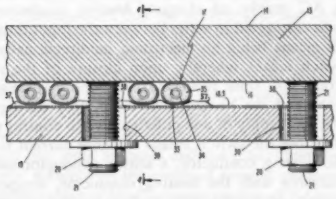
selected so as to inhibit said exposed adhesive surface of said first adhesive means from contacting said covering means.

4,251,713

ELECTRIC HEATER ASSEMBLY FOR DIFFUSION PUMPS

Arthur A. Landfors, Newton, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 21, 1978, Ser. No. 898,567
Int. Cl.[3] F04F *9/00*; H05B *3/30, 3/68*; F28F *1/32*
U.S. Cl. 219—275 **9 Claims**



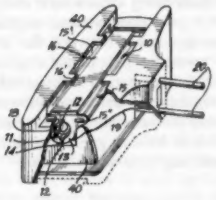
1. An electric heater assembly particularly adapted to heat a flat bottom surface of a boiler plate for a pool of vaporizable diffusion pump fluid comprising an elongated tubular heater having a tubular sheath, said tubular heater being adapted to be energized so that it has a tendency to be overheated if only air is its thermal load, a first side of said sheath adapted to contact the flat surface of the boiler plate, a thin, metal crush plate having raised and spaced elongated segments in contact with a second side of said sheath, said segments crossing the second side of said sheath so longitudinal axes of the sheath and the segments are non-aligned at intersections between the sheath and segments, the second side being opposite from the first side of the sheath, a heavy flat plate abutting against a first face of the thin plate opposite from the face from which the segments extend, means for urging the heavy plate against the thin plate toward the tubular heater so the segments are deformed against and pressed against the second side of the sheath, said segments being urged against the tubular sheath by the heavy plate and the means for urging and having a sufficiently close spacing and adequate contact area with the sheath to urge the sheath into contact with the flat surface of the boiler plate to prevent the overheating despite geometry variations tending to cause air spaces between the sheath and the flat surface of the boiler plate.

4,251,714

HEATING DEVICE FOR TABLETS CONTAINING EVAPORABLE SUBSTANCES

Fulvio Zobele, Trento, Italy, assignor to Zobele Industrie Chimiche S.p.A., Trento, Italy

Filed Jul. 20, 1977, Ser. No. 817,167
Int. Cl.[3] H05B *3/28*; B01J *7/00*; A01M *19/00*
U.S. Cl. 219—275 **10 Claims**

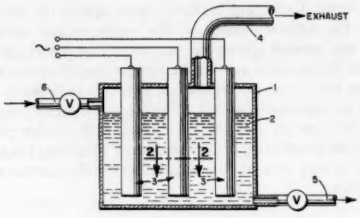


1. A heating device for evaporating substances, such as scents, deodorants or insecticides comprising an elongated, rectangular heating support having a T-shaped cross section and formed of electrical insulation material, a longitudinally extending hole disposed centrally in said heating support, a resistance heating element wound on a core, said heating element being housed within said hole in said heating support and extending longitudinally therewithin, said heating element having a pair of terminals extending to the exterior of said support, said support having an upper face portion forming a rectangular bearing plane for receiving and supporting the material to be evaporated, arm portions of said T-shaped support each being provided with a longitudinally extending hole for limiting lateral transfer of heat through said support, said support being mounted within a housing of electrical insulation material, said housing including an open top, said support being positioned in said housing with said rectangular bearing plane of said support being exposed through the open top of said housing, said housing including an integral connector plug means adapted to be connected to a current tap, said pair of heating element terminals being electrically connected to said plug means.

4,251,715
METHOD FOR DIRECTLY HEATING CONCENTRATED SULFURIC ACID BY ELECTRIC CURRENT FLOW BETWEEN SURFACE-PASSIVATED ELECTRODES

Stig A. Petersson, and Allan F. Norrö, both of Skelleftehamn, Sweden, assignors to Boliden Aktiebolag, Stockholm, Sweden

Filed Dec. 6, 1977, Ser. No. 858,078
Int. Cl.[3] H05B 3/60; F22B 1/30; C01B 17/88
U.S. Cl. 219—284 9 Claims



1. A method for directly heating a concentrated sulphuric-acid solution by means of electric current passed between surface-passivated electrodes of iron or iron alloys having a low resistance iron or iron alloy inner core covered by an outer high resistance passivating surface layer comprising immersing said electrodes in said concentrated sulphuric-acid solution, passing alternating current between the electrodes through said inner low resistance part of the electrodes and through said outer high resistance part of the electrodes, said electrodes being so surface-passivated that a transition resistance between the electrodes and the concentrated sulphuric-acid solution is obtained which is at least as great as a resistance exerted by said concentrated sulphuric-acid solution.

4,251,716
SELF-CLEANING GLASS-CERAMIC SURFACE COOKING UNIT

Walter E. Lewis, and Bohdan Hurko, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 30, 1978, Ser. No. 964,999
Int. Cl.[3] H05B 3/06
U.S. Cl. 219—446 13 Claims

1. A self-cleaning glass-ceramic surface cooking unit comprising:

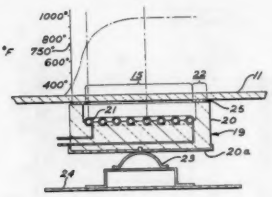
a glass-ceramic planar surface having at least one cooking area adapted to support a cooking utensil during normal cooking operation;

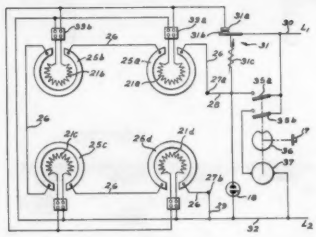
an electric cook heating unit mounted beneath said cooking area and spaced from said glass-ceramic surface,

first circuit means for supplying electric energy to the cook heating unit to raise the surface temperature within said cooking area to normal cooking levels,

additional electric heating means in contact with the glass-ceramic surface in the region adjacent said cooking area; and

second circuit means for supplying electric energy to said additional heating means to provide self-cleaning action by raising the surface temperature in said region to a level



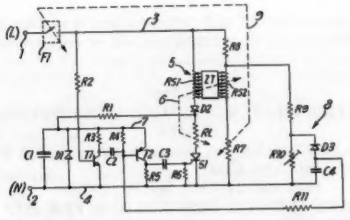


sufficient to remove baked-on food soils deposited within said region during one or more prior cooking operation.

4,251,717
HEATING CIRCUITS

Graham M. Cole, Lymington, England, assignor to Dreamland Electrical Appliances Limited, Southampton, England

Filed Sep. 20, 1978, Ser. No. 945,067
Claims priority, application United Kingdom, Oct. 11, 1977, 42295/77
Int. Cl.[3] H05B 1/02, 1/00
U.S. Cl. 219—497 11 Claims



1. A heating circuit comprising input terminals for connection to an AC supply, an elongate heating conductor and switch means connected in series between the input terminals, said switch means being an electronic unidirectionally conducting switch means whereby upon closure of the switch means current will flow from the AC supply through the switch means and the heating conductor only during half-cycles of the AC supply of one polarity, switch control means operative to close the switch means to cause current to flow through the heating conductor, a sensor conductor substantially coextensive with the heating conductor, temperature sensitive means coextensive with the heating and sensor conductors and having an impedance that falls with increasing temperature, a resistor, means connecting said resistor in series with the sensor conductor and connecting said resistor and said impedance of the temperature sensitive means in series between said input terminals regardless of whether or not the

switch means is conductive, whereby, in use, the AC supply voltage is applied across the series combination of said resistor and said impedance and a current dependent on the impedance of the temperature sensitive means flows from the AC supply through the resistor whereby the voltage across the resistor varies with said impedance and therefore with the temperature of the temperature sensitive means, voltage sensing means operative to monitor the voltage across said resistor during the half-cycles of the AC supply voltage of the other polarity and responsive to said voltage reaching a predetermined value to inhibit operation of the switch control means, and, in addition to said switch means, circuit interruption means disposed remote from the temperature sensitive means and electrically connected in series with the elongate conductor and the switch means, the circuit interruption means being responsive to excessive heating of said resistor due to a malfunction in the heating circuit enabling current to continue flowing through the heating conductor in the event of overheating of the temperature sensitive means to prevent current flow through the heating conductor and to continue prevention of such current flow even after the resistor has cooled.

4,251,718

HEATING CIRCUITS

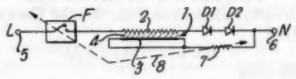
Graham M. Cole, Lymington, England, assignor to Dreamland Electrical Appliances Limited, Southampton, England

Filed Dec. 19, 1978, Ser. No. 971,918

Claims priority, application United Kingdom, Jan. 31, 1978, 3867/78

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—501 **28 Claims**



1. In a heating circuit comprising input terminals for connection to an AC supply, a first elongate conductor to effect heating, thermally-operative circuit interruption means, the first conductor and circuit interruption means being connected in series between the input terminals, a second elongate conductor substantially coextensive with the first conductor, separating means which separates the two conductors and which has an impedance that falls with increasing temperature, and a resistor that is thermally coupled to the circuit interruption means, the improvement comprising means electrically connecting said resistor between the second conductor and one of said input terminals such that the resistor and said impedance are connected in series between the input terminals, and half-wave rectifier means connected in series with the first conductor and the circuit interruption means between the first conductor and said one input terminal so that during those half-cycles of the AC supply during which the rectifier means does not conduct the second and first conductors are at the potentials of said one input terminal and the other input terminal, respectively, whereby in the event of general overheating of the separating means or localised overheating of the separating means anywhere along its length the consequent general or localised drop in said impedance will cause the current through the resistor to increase by an amount that will heat the resistor by an amount sufficient to cause the circuit interruption means to disconnect the circuit from the supply.

4,251,719

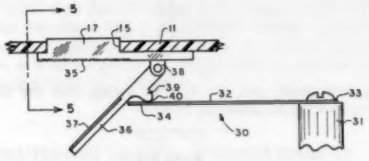
CONTACT LENS DISINFECTOR WITH TEMPERATURE INDICATOR

Francis E. Ryder, Arab, Ala., assignor to Ryder International Corporation, Arab, Ala.

Filed Jun. 22, 1979, Ser. No. 51,122

Int. Cl.³ H05B *3/06;* **C01F** *1/00;* **A61L** *2/00*

U.S. Cl. 219—521 **4 Claims**



1. In a contact lens disinfector unit for the heat disinfecting of a pair of contact lenses contained within a lens case, wherein said unit includes a housing, a heating block within said housing arranged for contacting the lens case for heating the contact lenses in a contained solution to a disinfecting temperature; temperature indicating means for providing an indication as to the thermal status of the unit, said temperature indicating means comprising a viewing window carried by said housing and including an inner substantially planar surface, said window being partially opaque; a pivotally mounted indicator member having an upper, planar surface including temperature indicating indicia thereon, means pivotally mounting said indicator member for movement relative to said viewing window, such that said indicator member may be pivoted into position with the upper planar surface thereof in substantially flush contact with said substantially planar inner surface of the viewing window, said indicator member being pivotable away from said viewing window to move the planar surface thereof out of contact with the substantially inner planar surface of said window, with the temperature indicating indicia on said indicator member only being visible through said partially opaque viewing window when the respective surfaces thereof lie in substantially flush contact; and a bimetallic, elongate member having a first end associated with said heating block and a second end engaged with said indicator member, said second end being arranged to move in a first direction to cause said upper planar surface of the indicator member to move into flush contact with the inner surface of said viewing window, thereby rendering said indicia thereon visible through said window and to move into a second direction allowing said planar member to pivot away from said viewing window, thereby interrupting said flush contact and removing said indicia from view through said window.

4,251,720

HEATER ASSEMBLY

Ingo Bleckmann, Ignaz-Rieder-Kai 11, Salzburg, and Wilhelm Adam, Reisenbergerstrasse 21, A-5020 Salzburg, both of Austria

Filed Dec. 4, 1979, Ser. No. 100,124

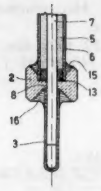
Claims priority, application Fed. Rep. of Germany, Dec. 6, 1978, 2852808

Int. Cl.³ H05B *3/08*

U.S. Cl. 219—541 **6 Claims**

1. A heater assembly for a container, comprising a tubular casing having an end portion and a heating resistance wire coil embedded in a heat-resistant insulating material in said casing, an insulating sleeve on said end portion of the casing, said end portion being supported directly against said insulating sleeve, a connecting pin member which is operatively connected to the heating resistance wire coil and which projects outwardly therefrom through the insulating sleeve, a plug connecting pin

on the portion of the pin member projecting out of the insulating sleeve, and a casting material around respective parts of the



plug connecting pin, the tubular casing and the insulating sleeve to form an assembly thereof.

4,251,721

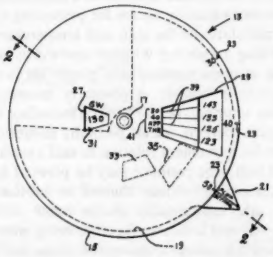
PATTERN AND THRESHOLD SPEED CALCULATOR

Charles D. Rathbun, 1005 Mistletoe, Ft. Worth, Tex. 76126

Filed Aug. 14, 1979, Ser. No. 66,357

Int. Cl.[3] **G06C** *27/00, 3/00*

U.S. Cl. 235—78 R **3 Claims**



1. A calculator for use in determining the pattern, approach and threshold speeds of an aircraft during the transition and landing phase, said calculator comprising a central pin member, a first upper disk of substantially circular configuration having two trapezoidal shaped openings therein, one of said trapezoidal shaped openings for indicating speed of the aircraft and the other for indicating gross weight, said first disk being independently rotatable around said pin member, a second intermediate disk immediately under said first disk and independently rotatable around said pin member, said second disk being circular in configuration with a 90° angular section removed and having three trapezoidal shaped cut-outs each spaced radially outward at increasing distances from the center and at adjacent positions, a third lower disk immediately below said second disk and independently rotatable around said pin member, said third disk having markings thereon corresponding to gross weight and speed of the aircraft, and means for determining the effect of the flap setting of the aircraft on the pattern, approach and threshold speeds of the aircraft at any one of a series of gross weight conditions.

4,251,722

PULSE GENERATOR

Remi Vautier, Nice, France, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 31, 1979, Ser. No. 71,440

Int. Cl.[3] **H03K** *21/36*

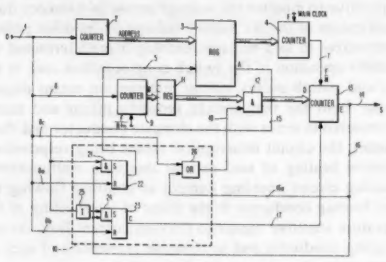
U.S. Cl. 235—92 DM **5 Claims**

1. A device for obtaining N+n output pulses from N original pulses including:

a count-up counter which is reset upon each original pulse in order to be incremented at a first predetermined frequency until the following original pulse,

a count-down counter loaded with the contents of said count-up counter when said original pulse appears in order to be decremented at a second predetermined frequency until it reaches value 0,

a variable presettable counter supplying said second predetermined frequency to said count-down counter so that the latter is decremented when each original pulse appears



or when output pulses appear with the exception of the last pulse in the interval when the time interval between said original pulses includes several output pulses, and

a control unit for controlling said variable counter in response to the original pulses so that said count-down counter supplies the output pulses each time it reaches value 0.

4,251,723

OPTO-ELECTRONICAL SWITCHING DEVICE, SPECIALLY FOR MOTOR VEHICLES

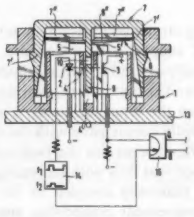
Volker Speidel, Schalksmühle; Eduard Bergmann, Lüdenscheid-Dünnebrett, and Lothar Worlitz, Altena, all of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Lüdenscheid, Fed. Rep. of Germany

Filed Jan. 8, 1979, Ser. No. 1,923

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1978, 2848103

Int. Cl.[3] **H01J** *39/12*

U.S. Cl. 250—229 **6 Claims**



1. An opto-electronic switching device:

a housing containing a photodiode and a phototransistor;

a rectangular push button slidable in said housing and having an apertured plate extending between said photodiode and phototransistor and movable between positions where its aperture blocks or opens an optical path between said photodiode and phototransistor;

a rectangular snap-acting leaf spring curved transversely of its long dimension arranged with its corners engaging corner portions of said push button and being normally concave on the side facing said push button; and

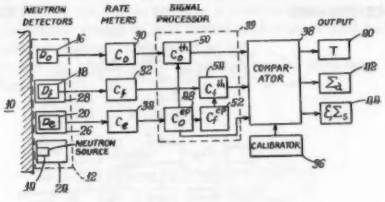
a fixed pin in said housing having an end engaging said leaf spring, on its side facing away from said push button, near the geometrical center of the spring.

4,251,724

METHOD AND APPARATUS FOR DETERMINATION OF TEMPERATURE, NEUTRON ABSORPTION CROSS SECTION AND NEUTRON MODERATING POWER

Nicholas Vagelatos; Donald K. Steinman; Joseph John, all of San Diego, and Jack C. Young, Escondido, all of Calif., assignors to IRT Corporation, San Diego, Calif.

Filed Jan. 23, 1978, Ser. No. 871,759
Int. Cl.[2] G01V 5/00; B01D 59/44
U.S. Cl. 250—264 **26 Claims**



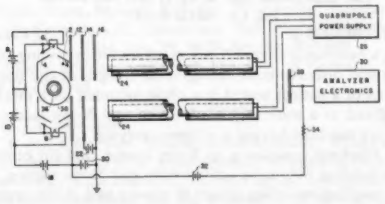
10. A method of nuclear well logging for determining the temperature, neutron absorption cross section and neutron moderating power of a medium outside a borehole comprising traversing the borehole with a source of fast neutrons to irradiate the medium with fast neutrons, at the same time separately detecting in three respective first energy ranges slow neutrons thereupon returning from the medium at successive depths in the borehole by producing three detection signals each systematically related to the slow neutron population detected in a respective one of such first energy ranges, combining said three detection signals to produce three derived indicia each systematically related to the population of slow neutrons returning from the medium in a respective one of three second energy ranges, at least two of said derived indicia and their respective second energy range differing from all of said detection signals and their respective first energy ranges, comparing the derived indicia with calibration indicia similarly systematically related to the population of slow neutrons in said three second energy ranges returning from similarly irradiated calibration media for which the relationships of temperature, neutron absorption cross section and neutron moderating power to said calibration indicia are known to provide separate indications of temperature, neutron absorption cross section and neutron moderating power for which the calibration indicia correspond to the derived indicia, and recording the separate indications as a function of the depth in the borehole at which the fast neutrons are injected.

4,251,725

PROGRAMMED SAMPLE PYROLYSIS FOR MASS SPECTROMETER

William M. Adkisson, Englewood, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 6, 1979, Ser. No. 63,816
Int. Cl.[3] H01J 27/00; B01D 59/44
U.S. Cl. 250—281 **10 Claims**



1. In a quadrupole mass spectrometer having an ionization chamber for ionizing particles of a specimen, an improved specimen pyrolysis assembly comprising:

a cylindrical rod specimen holder having a shallow specimen receptacle formed in one end thereof, said receptacle being arranged to hold a predetermined quantity of said specimen,

means for positioning said specimen holder with said receptacle adjacent said ionization chamber, and

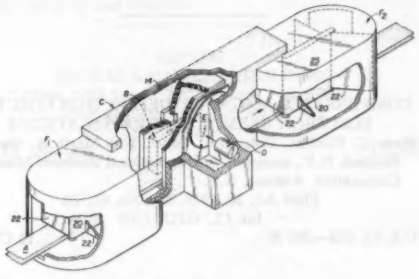
heating means positioned adjacent said one end to heat said specimen in accordance with a controlled program with an initial high rate of temperature change, and a subsequent non-linear rate of temperature change whereby to cause said specimen to disassociate into component parts over a wide range and to project said component parts into said ionization chamber.

4,251,726

DEUTERIUM TAGGED ARTICLES SUCH AS EXPLOSIVES AND METHOD FOR DETECTION THEREOF

Luis W. Alvarez, 131 Southampton Ave., Berkeley, Calif. 94707

Filed Feb. 26, 1979, Ser. No. 15,499
Int. Cl.[2] G09K 3/00
U.S. Cl. 250—302 **20 Claims**



1. Apparatus useful for the detection of deuterium tagged articles comprising: a source of X-ray photons sufficient in frequency and energy to cause the following reaction but having energy less than 4.14 MeV:

$$D \rightarrow n + p \quad 2.23 \text{ MeV};$$

and a neutron detector embedded in a hydrogenous material aligned in the path of said generated neutrons to detect generated neutrons; and means for conveying said article between said photon source and neutron detector.

4,251,727

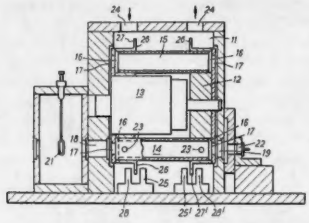
GAS DETECTION

David R. Piercy, 6 Boswells Close, Bere Regis, Wareham, Dorset, England

Filed May 24, 1979, Ser. No. 42,153
Int. Cl.[2] G01N 21/26
U.S. Cl. 250—343 **7 Claims**

1. Apparatus for detecting gases by absorption of infra-red radiation comprising a source of infra-red radiation, and a detector for infra-red radiation, said source and said detector being arranged at opposite ends of an optical path through the apparatus, a plurality of cells including at least one sample cell and at least one reference cell arranged to be moved, in turn, into said optical path such as that when a cell is positioned in said optical path, infra-red radiation from said source passes through the cell before reaching said detector, and enclosure housing said cells and the part of said optical path into which said cells are arranged to be moved, means for introducing an atmosphere to be tested into said enclosure, means associated

with at least one of said sampling cells by which during movement thereof through said enclosure into said optical path the atmosphere in the enclosure is pumped into said cell by the motion of said cell through the enclosure, and electronic means for comparing infra-red radiation received by the detector



when said at least one sampling cell is positioned in said optical path with the infra-red radiation received by the detector when said at least one reference cell is positioned in said optical path, and means for producing a signal dependent on the said comparison.

4,251,728

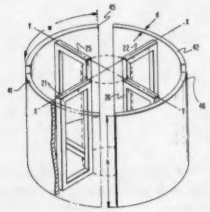
COMPENSATED MAGNETIC DEFLECTION COIL FOR ELECTRON BEAM LITHOGRAPHY SYSTEM

Hans C. Pfeiffer, Ridgefield, Conn., and Maris A. Sturans, Bedford, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,726

Int. Cl.³ G21K *1/08*

U.S. Cl. 250—396 R **15 Claims**



1. A magnetic deflection coil for an electron beam lithographic system, said coil including a plurality of toroidal conductive windings, each of said windings including an inner arm and an outer arm, the inner arms defining a cylindrical space for passing a beam of charged particles substantially parallel to the axis of the cylindrical space, said beam of charged particles being deflected along a deflection axis perpendicular to the axis of the cylindrical space by magnetic fields produced by current flow in said plurality of toroidal conductive windings, the current flow including deflection currents and undesired eddy currents, the improvement comprising:

passive conductive compensating means including thin sheets of conductive material arranged proximate to the outer arms of the windings and substantially surrounding the deflection coil such that eddy current in said outer arms are coupled to said compensating means thereby generating an electromagnetic field for substantially offsetting the effects of an electromagnetic field generated by eddy currents in the inner arms.

4,251,729

X-RAY DIAGNOSTIC INSTALLATION FOR X-RAY PHOTOGRAPHS

Rolf Pfeifer, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

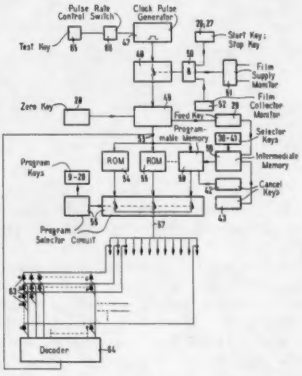
Filed Feb. 5, 1979, Ser. No. 9,070

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1978, 2809336

The portion of the term of this patent subsequent to Jan. 30, 1996, has been disclaimed.

Int. Cl.³ H05G *1/00*

U.S. Cl. 250—402 **4 Claims**



1. An x-ray diagnostic installation for x-ray photographs comprising a program control device for the photographic cycle which comprises a resettable pulse counter, an electronic read-only memory for each photographic program whose input is connected to the resettable pulse counter, a clock pulse generator for actuating said pulse counter, so that each memory delivers program signals predetermined by its program that correspond to the output signals of the pulse counter, and a program selector circuit for connecting the outputs of all read-only memories to the component parts they control, characterized in that display means **(63)** for the content of the read-only memories **(54, 55)** are provided, which display means are connected to the output **(57)** of the program selector circuit **(56)** and whose display is synchronized by means of the clock pulse generator **(47)**.

4,251,730

PANORAMIC DENTAL X-RAY MACHINE X-MOTION DRIVE

Robert H. Cushman, Princeton, N.J.; Anthony Ciavattoni, Staten Island, N.Y.; John J. Flynn, Hazlet, N.J., and Thomas J. Schubert, Staten Island, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 2,148, Jan. 9, 1979, abandoned. This application Apr. 2, 1979, Ser. No. 25,706

Int. Cl.³ A61B *6/14*

U.S. Cl. 250—439 P **12 Claims**

1. In a panoramic dental X-ray machine for providing continuous and discontinuous radiographic images of the dental arch area of a patient seated in a chair mounted on a mechanism affixed to a stationary platform of said X-ray machine, said X-ray machine having a column carrying

(a) a tubehead containing an X-ray source, and (b) camera for holding film to be activated by said X-ray source,

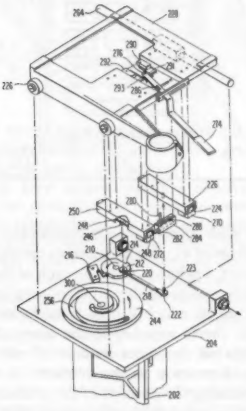
said machine including means to power said X-ray source and means for moving said film in said camera, and means for orbiting said column about said patient in a circular

pattern, the improvement therewith wherein said mechanism comprises

(A) means to shift said chair in an X-direction after said means to power said X-ray source have been rendered inoperative during a continuous orbit of said column about said patient when said X-ray source and said film are aligned with the spine of said patient to provide a discontinuous panoramic radiographic image of said dental arch area of said patient, and

(B) other means for transporting said chair at a non-constant speed in an X-direction while said column continuously orbits the patient to provide a continuous panoramic radiographic image of said dental arch area of said patient, said mechanism comprising

(a) a bottom plate rigidly supported by said stationary platform,



(b) an upper plate disposed in spaced vertical relationship above said bottom plate, said upper plate being movable in an X-direction only,

(c) means attached to each of said plates for permitting movement of said upper plate in said X-direction,

(d) a cam mounted for rotation on an upper surface of said bottom plate, said cam having a non-radial groove disposed therein,

(e) slide assembly means secured to an underportion of said upper plate,

(f) a cam follower fixedly depending from said slide assembly means for cooperating with said groove of said cam for providing non-constant speed of said upper plate in said X-direction,

said chair shift means urging said upper plate to move in said X-direction independently of movement of said upper plate by said other means.

4,251,731

ARRANGEMENT FOR HOLDING X-RAY FILM VACUUM CASSETTES

Walter Bauer, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert, A.G., Leverkusen, Fed. Rep. of Germany

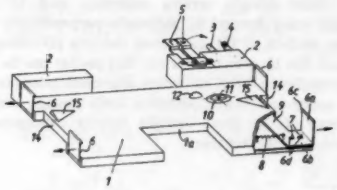
Filed Dec. 19, 1978, Ser. No. 971,076

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1977, 2758982

Int. Cl.[3] **G11B** *1/00*

U.S. Cl. 250—468 **8 Claims**

1. An X-ray film vacuum cassette-holding arrangement of the type used to hold X-ray cassettes in position on an X-ray exposure-taking machine, comprising an elongated loading platform mountable on the machine and having two ends spaced from one another in the direction of elongation and a cassette-supporting surface intermediate said ends; at least one holding bracket at each of said ends and each having a portion projecting upwardly beyond said surface; means mounting each of said brackets for movement in said direction of elongation; and biasing means urging each of said brackets resiliently towards the other so that, on engagement of one end part of a cassette with one of said brackets and pressure thereagainst in said direction of elongation but away from the other bracket,



said one bracket will yield sufficiently for said cassette to be swung about said one end part thereof so that its other end part will come to rest on said surface and, when the pressure is thereupon released, the cassette will be urged by the biasing means acting upon said one bracket to slide with said other end part against the other bracket so as to be firmly held in place at said end parts by said brackets.

4,251,732

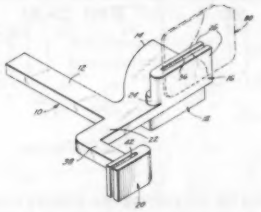
DENTAL X-RAY FILM HOLDERS

Alan J. Fried, 1359 Sussex Rd., Teaneck, N.J. 07666

Filed Aug. 20, 1979, Ser. No. 67,943

Int. Cl.[3] **G03B** *41/16*

U.S. Cl. 250—479 **3 Claims**



1. An instrument for holding and positioning intra-oral dental X-ray film packets for all anterior, posterior and bitewing views comprising:

an essentially triangular bite platform having two straight edges forming a right angle and a third curved edge, said bite platform having an upper and a lower biting surface for engagement by upper and lower posterior teeth simultaneously;

slotted film holding means formed by perpendicularly projecting sidewalls at one straight edge of said bite platform, extending above and below the bite platform surfaces, forming two adjacent 'U' shaped slots diametrically opposed to each other so as to provide slotted means for holding a dental X-ray film packet at right angles to either the upper or the lower bite platform surface when taking posterior periapical views;

a relatively long straight narrow extension joining the triangular bite platform at its curved edge side, in a direction perpendicular to the film holding slots, forming a 'T' shaped intersection, said long narrow extension providing means for aligning an X-ray beam source at right angles to the X-ray film packet as it is held in place by the slot of the upper bite surface or as it is held in the slot of the lower bite surface

a relatively short straight narrow extension forming a right

angle with the 'T' shaped intersection and projecting in a direction 180° opposite to the direction of the X-ray beam alignment extension, said short straight narrow extension forming a bite platform having flat upper and lower biting surfaces suitable for engagement by upper and lower posterior teeth simultaneously; and

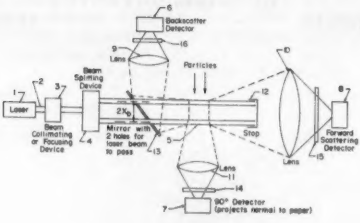
a 'U' shaped X-ray film holding means joined to the end of said short straight narrow extension, said 'U' shaped means being formed by sidewalls perpendicular to the biting surface of the extension, thereby providing a 'U' shaped slot by which an X-ray film packet can be held at right angles to the X-ray beam alignment extension when the upper and lower posterior teeth engage the biting surfaces of the short straight narrow extension when bitewing views are taken.

4,251,733

TECHNIQUE FOR SIMULTANEOUS PARTICLE SIZE AND VELOCITY MEASUREMENT

Edwin D. Hirleman, Jr., 2008 E. Watson, Tempe, Ariz. 85283

Filed Jun. 29, 1978, Ser. No. 920,550
Int. Cl.³ G01N *15/06*
U.S. Cl. 250—575 **14 Claims**



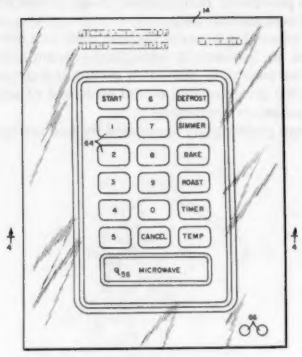
1. In a system for determining two velocity components and at least one of the physical properties of a particle passing through a particle sampling zone and including: means for generating two beams of electromagnetic radiation with radially symmetric intensity distributions and for passing said beams of radiation through said zone whereby a portion of said radiation is incident on and is scattered by said particle; detective means responsive to said scattered radiation for developing a signal indicative of the temporal history of the magnitude or intensity of said radiation incident on said particle during the traverse through said sampling zone where said signal contains two signal pulses separated in time resulting from said particle passing through each of the two said beams in said sampling zone in succession; means responsive to said signal to determine the speed or velocity magnitude of said particle in the geometric plane normal to said beams from the shape of at least one of the two signal pulses; means responsive to the time between said two signal pulses in conjunction with said speed measurement to determine the two velocity components in said plane; means responsive to said two signal pulses in conjunction with said two velocity component measurement to determine an absolute measure of said radiation intensity incident on said particle during passage through said sampling zone; and means responsive to said signal pulses in conjunction with said measure of said incident radiation intensity to determine a measure of at least one of the physical properties of said particle.

4,251,734

PUBLICATIONS COVER WITH DISPLAY DEVICE

Carl P. Mayer, Lincoln, R.I., and Robert A. Rothenberg, Lexington, Mass., assignors to Chomerics, Inc., Woburn, Mass.

Filed May 4, 1979, Ser. No. 36,247
Int. Cl.³ H01H *9/26*
U.S. Cl. 290—5 **1 Claim**

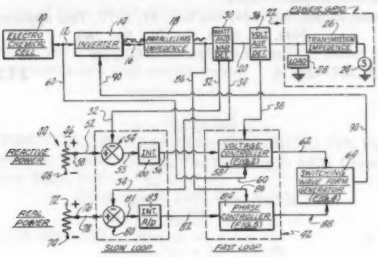


1. A cover with display device comprising hinged sheets defining the leaves of a cover designed to receive, for example, a company report, a printed circuit on each of the two interfacing surfaces of two adjacent sheets embodying contact areas on the respective sheets which can be brought into engagement by pressing the sheets together in the areas of the contacts, tabulated indicia on the outer surface of one of the sheets corresponding in position to the contacts on the inner side thereof for indicating the position of the contacts between the sheets, said indicia representing the current flow in the printed circuit completed by pressing any predetermined pair of contacts together and said indicia being imitative of a keyboard and bearing legends, a pair of terminals on the inner side of said one of the sheets, a pair of cells at the inner side of the other sheet disposed with their opposed poles at one end connected and with their opposed poles at the other end positioned to engage the pair of terminals on the said one of the sheets when the sheets are folded into confronting relations, a yieldable sponge rubber cushion block attached to the inner side of said other of the sheets containing spaced holes for frictionally receiving and holding the pair of cells so positioned, said block being thicker than the cells so that the poles of the cells confronting said one of the sheets are held spaced from the terminals until pressure is applied to compress the block sufficiently to expose the poles at the ends of the cells, means on the outer surface of said one sheet indicating the location of the cells and the contact areas at the inner side to enable pressing the poles of the cells into engagement with the terminals to supply the circuit with energy, said one of the sheets containing a hole located in the area of the tabulated indicia, a diode attached to the inner side of said one of said sheets in a position to protrude said hole, means connected the diode in the circuitry so as to be energized by completion of current flow in the circuitry, a non-conductive barrier sheet comprised of flexible plastic hingedly connected to one edge of said one of the sheets interposable between the sheets, said barrier sheet containing openings corresponding in position to the positions of the contacts and the cells through which the contact areas and poles of the cells can be engaged by pressing upon the indicia and said means on the outer side of one of the sheets to engage the contact areas and poles on the inner sides of the sheets and a backing sheet hingedly connected to the other edge of said one of the sheets for folding over the said other of the sheets and the barrier sheet positioned between the sheets.

4,251,735
DUAL SPEED CONTROL CIRCUIT FOR POWER FLOW THROUGH AN INVERTER

Allen K. Coleman, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1979, Ser. No. 59,724
Int. Cl.³ H02J *3/32*
U.S. Cl. 307—46 **8 Claims**



1. A control circuit for an inverter which can be connected between an electrochemical cell and a power grid for electrical energy flow therebetween, comprising:

first feedback loop means having a relatively slow time constant for receiving an adjustable power command signal, said adjustable power command signal including a reactive power command signal and a real power command signal, which are indicative of desired electrical energy flow with said power grid, and for receiving sensed signals indicative of the actual electrical energy flow with the power grid, and for providing a power error signal in response thereto;

a second feedback loop means having a fast time constant for receiving said reactive power command signal and said real power command signal, and for sensing the phase of the signal waveform on said power grid, and for providing an output signal for varying the amplitude of the fundamental signal supplied to said power grid, and also for varying the phase of said fundamental signal to said power grid; and

switching waveform generator means connected to said second feedback loop means for providing a switching waveform to aid inverter of a pattern adjusted in accordance with said power error signal thereby varying the power flow between said power grid and said electrochemical cell.

4,251,736
METHOD FOR CONTROLLING POWER FLOW BETWEEN AN ELECTROCHEMICAL CELL AND A POWER GRID

Allen K. Coleman, Manchester, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 23, 1979, Ser. No. 59,725
Int. Cl.³ H02J *3/32*
U.S. Cl. 307—46 **2 Claims**

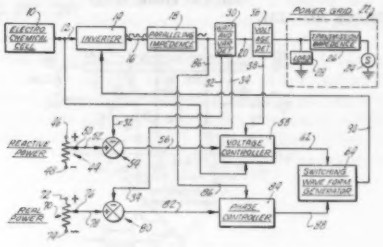
1. A method for adjusting the magnitude and direction of electrical power flowing from an electrochemical cell through an inverter to a power grid, or the like, comprising:

providing a reactive power command signal and a real power command signal, each of which is respectively proportional to the desired reactive power and real power energy flow between said electrochemical cell and said utility;

comparing said reactive power command signal and said real power command signal with a sensed signal which is proportional to the actual reactive power and real power components of energy flow, respectively, between said electrochemical cell and said utility to derive a reactive power error signal and a real power error signal;

comparing said reactive power error signal with the difference between the voltage of said electrochemical cell and said power grid voltage to form a voltage control signal for varying the amplitude of said fundamental signal waveform out of said inverter;

comparing said real power error command signal with a signal proportional to the phase of said fundamental signal



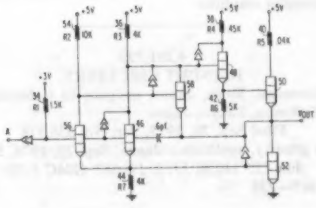
waveform supplied to said inverter to form a phase control signal for varying the phase difference between the inverter fundamental signal waveform and that of said power grid waveform; and

adjusting the phase of the switching points of a switching waveform pattern in the inverter in response to the voltage control signal and the phase control signal.

4,251,737
DOTTABLE ACTIVE COLLECTOR DRIVER CIRCUIT

Gene J. Gaudenzi, Purdys, N.Y., assignor to International Business Machines Corporation, Hopewell Junction, N.Y.

Filed Dec. 29, 1978, Ser. No. 974,637
Int. Cl.³ H03K *19/013, 19/08*
U.S. Cl. 307—209 **5 Claims**



1. A dottable active collector drive circuit, comprising

a first switch means having a control terminal and an output terminal for selectively turning on to provide a low potential to its output terminal in response to a control signal at its control terminal;

a second switch means having a control terminal and an output terminal for selectively turning on to provide a high potential to its output terminal in response to a control signal at its control terminal, the output terminals of said first and second switch means being connected together to form an output terminal of said driver circuit;

means for supplying 180° out-of-phase control signals to said first and second switch means in response to an input to said driver circuit;

disabling means for disabling said second switch means following a low potential-to-high potential transition in the output of said drive circuit; and

delay means for delaying the operation of said disabling means until after said driver circuit output voltage has risen to a predetermined value.

4,251,738

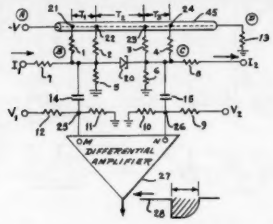
BALANCED INPUT ZERO DIFFERENTIAL DETECTOR

Ying C. Hwang, Liverpool, and John W. Lunden, Camillus, both of N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Continuation-in-part of Ser. No. 751,238, Dec. 16, 1976, abandoned. This application Aug. 10, 1978, Ser. No. 932,815

Int. Cl.[3] H03K *5/153*

U.S. Cl. 307—231 3 Claims



1. A balanced input zero differential detector comprising

a tapped delay line for receiving an input signal, said tapped delay line having n equally spaced taps comprising a series of taps 1 through n, n being an even integer,

an equal value tap resistor connected to each tap,

a tunnel diode,

first and second tunnel diode load line resistors,

a first resistance network comprising the tap resistors of taps 1 through n/2 connected in parallel and to ground through said first tunnel diode load line resistor,

a second resistance network comprising the tap resistors of taps (n/2)+1 through n connected in parallel and to ground through said second tunnel diode load line resistor, and

a differential amplifier having first and second inputs, said tunnel diode being connected between said first and second resistance networks and across the inputs of said differential amplifier.

4,251,739

IC INPUT CIRCUITRY

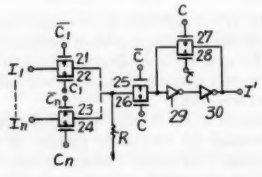
Shinji Morozumi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sep. 20, 1977, Ser. No. 835,116

Claims priority, application Japan, Sep. 20, 1976, 51-112785

Int. Cl.[3] H03K *5/19, 17/687;* G04C *3/00*

U.S. Cl. 307—238 17 Claims



1. An input circuit particularly suited for use in an electronic wristwatch including at least one input stage, each said input stage including at least one input terminal for receiving a two-state input signal, impedance means intermediate each said input terminal and a reference potential for distinguishing between said respective states of each said input signal applied thereto, the improvement comprising gating means for receiving a control gating signal having a predetermined time interval, and a memory means coupled through said gating means to each of said input terminals for storing the state of each said input signal applied to an input terminal and discriminated by said impedance means during the predetermined time interval that said control gating signal is received by said gating means.

4,251,740

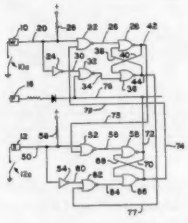
CONTINUOUS FOCUS PROPORTIONAL CONTROLLER

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 834,760, Sep. 19, 1977. This application Nov. 20, 1978, Ser. No. 962,280

Int. Cl.[3] H03K *17/94, 5/00*

U.S. Cl. 307—247 A 2 Claims



1. Apparatus for use with a pair of switches that alternate in their operation, each switch having an open state and a closed state and having contacts that may bounce to produce a plurality of signal pulses, comprising:

a first flip-flop having a first input connected to the first of the switches and having a second input and an output;

a second flip-flop having a first input connected to the second of the switches and having a second input and an output;

means connecting the output of the first flip-flop to the second input of said second flip-flop; and

means connecting the output of the second flip-flop to the second input of the first flip-flop whereby the output of the first flip-flop changes upon the occurrence of the first contact state change closure of the first of the switches and the output of the second flip-flop changes upon the occurrence of the first state change closure of the second of the switches.

4,251,741

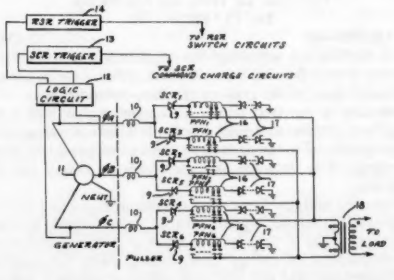
HIGH POWER PULSER

Robert A. Gardenghi, and Edward H. Hooper, both of Catonsville, Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 8, 1979, Ser. No. 10,204

Int. Cl.[3] H03K *3/57*

U.S. Cl. 307—260 6 Claims



1. A high power pulser comprising an m phase A.C. genera-

tor each phase feeding n parallel pulse forming networks, m and n being integers not less than 2,

an output means,

means comprising a controlled switch means controlling the input of each pulse forming network and a command charge switching circuit controlling said controlled switch means sequentially in response to A.C. generator output phase relationships for effecting sequential charging of said pulse forming networks by said A.C. generator, and

means for simultaneously discharging said pulse forming neworks into said output means.

4,251,742

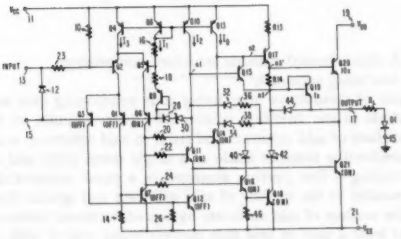
CURRENT SOURCE, AS FOR SWITCHING PIN DIODES

Howard R. Beelitz, Gillett, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 9, 1979, Ser. No. 28,367

Int. Cl.[3] H03K *3/26, 23/14*

U.S. Cl. 307—270 **8 Claims**



1. A current driver for supplying diode load means reverse-bias voltage in response to a first level of binary control signal, and for supplying said diode load means a forward-bias current in response to a second level of said binary control signal, said current driver comprising:

an output terminal and a reference terminal suitable for connecting said diode load means therebetween;

switch means having first, second, and third electrodes, said first level of binary control signal conditioning said switch means for conduction between the first and third electrodes thereof, said second level of binary control signal conditioning said switch means for non-conduction between the first and third electrodes thereof, said first electrode being suitable for receiving a source of reverse-bias voltage with respect to said reference terminal, the second electrode of said switch means being connected to said output terminal;

voltage sensing means connected to said output terminal for sensing the output voltage thereto, said voltage sensing means including means responsive to voltage on said output terminal for providing a first output signal whenever said output voltage is below a predetermined threshold voltage, and for providing a second output signal whenever said output voltage is above said predetermined threshold value; and

a two-level current source supplying output current to said output terminal responsive to said second level of binary control signal, and not supplying output current to said output terminal responsive to said first level of binary control signal, supplying said output current at a first level to said diode load means responsive to said first output signal from said voltage sensing means and at a second level responsive to said second output signal from said voltage sensing means, said second current level being larger than said first current level and being sufficient to forward bias said diode load means.

4,251,743

CURRENT SOURCE CIRCUIT

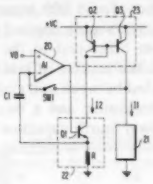
Kyuichi Hareyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1978, Ser. No. 955,742

Claims priority, application Japan, Oct. 28, 1977, 52/129922

Int. Cl.[3] H03K *3/01*

U.S. Cl. 307—297 **20 Claims**



1. A current source circuit comprising first current source means for producing a given current value, second current source means for producing a controlled amount of current, means for detecting a difference between said given current value and the current value flowing through said second current source means, and controlling means responsive to the detected difference for controlling said second current source means to make the amount of the current produced substantially equal to said given current value.

4,251,744

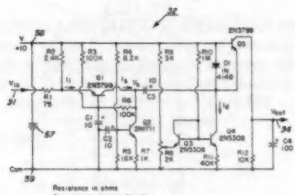
PULSE CONVERSION CIRCUIT

Walter K. Green, Gilroy, Calif., assignor to General Electric Company, San Jose, Calif.

Continuation of Ser. No. 827,446, Aug. 25, 1977, abandoned, which is a division of Ser. No. 708,281, Jul. 23, 1976, Pat. No. 4,092,539. This application Aug. 4, 1978, Ser. No. 931,252

Int. Cl.[2] H03K *5/153, 5/00*

U.S. Cl. 307—362 **1 Claim**



1. A pulse conversion circuit comprising the combination of: a power supply line connected to one terminal of a power source; a common line connected to the other terminal of said power source; an input line for receiving said voltage pulses; a first transistor, a first resistor connected between said input line and the emitter of said first transistor; a second resistor connected between said supply line and the emitter of said first transistor, a third resistor connected between said supply line and the base of said first transistor; a first capacitor connected between said common line and the base of said first transistor; a second transistor; a fourth resistor connected between said supply line and the base of said second transistor; a fifth resistor connected between said common line and the base of said second transistor; a second capacitor connected between said common line and the base of said second transistor; a sixth resistor connected between the base of said first transistor and the collectors of said first and second transistors; a seventh resistor connected between the emitter of said second transistor and said common line; a third transistor; an eighth resistor and a ninth resistor connected in series between said supply

line and said common line, said ninth resistor having an adjustable tap, said tap being connected to the emitter of said third transistor; a fourth transistor; a tenth resistor connected from said supply line to the base and to the collector of said third transistor and to the base of said fourth transistor; a fifth transistor; an eleventh resistor connected between said common line and the emitter of said fourth transistor; a third capacitor connected between the collectors of said first and second transistors and the emitter of said fifth transistor; a first diode connected at one end to said supply line and to the base of said fifth transistor and at its other end to the collector of said fourth transistor and to the emitter of said fifth transistor; a fourth capacitor connected between said common line and the collector of said fifth transistor; and a twelfth resistor connected in parallel with said fourth capacitor.

4,251,745

METHOD AND APPARATUS FOR COOLING SUPERCONDUCTIVE WINDINGS OF ELECTRIC MACHINES

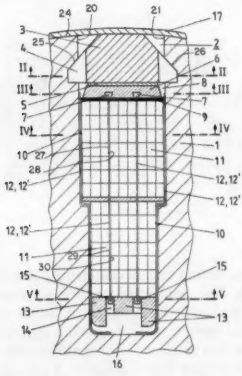
Willy Germann, Wurenios, Switzerland, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 19, 1979, Ser. No. 4,868

Claims priority, application Switzerland, Jan. 25, 1978, 768/78

Int. Cl.³ H02K *9/00*

U.S. Cl. 310—52 **12 Claims**



1. An electric machine comprising:

a rotatably mounted rotor having a plurality of axially-extending slots;

an electrically conductive winding positioned in each slot and fashioned from a superconductive material;

a corresponding plurality of keys, each key being positioned in a corresponding slot so as to hold the winding therein;

a manifold positioned in each slot above the corresponding winding and having distribution channels; and

a plurality of radially extending cooling ducts positioned internally of each winding and communicating with the corresponding distribution channels.

4,251,746

DIRECT-HEATED CATHODE STRUCTURE

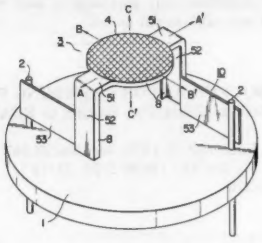
Takao Kawamura, Chiba; Yukihiro Izumida, Mobara; Hiroshi Fukushima; Takeo Takemoto, both of Chiba; Masaru Nakazawa, Matsudo, and Tetsuo Kumazawa, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Feb. 27, 1979, Ser. No. 15,620

Claims priority, application Japan, May 2, 1978, 53/52926

Int. Cl.³ H01J *1/14, 19/06;* H01K *1/04*

U.S. Cl. 313—345 **11 Claims**



1. A direct-heated cathode structure comprising:

an insulating substrate;

a pair of conductive supporting rods penetrating said substrate in the direction substantially perpendicular to the surface of said substrate and fixed to said substrate; and

a conductive member made of a single metal plate and including a first portion arranged in a plane substantially parallel to the surface of said substrate and spaced from the surface of said substrate by a predetermined distance, at least a part of said first portion being coated with an electron emissive material, second portions extended from said first portion in said parallel plane substantially symmetrically with respect to said first portion, third portions extended with a predetermined length from the end of extension of respective second portions toward said substrate in the direction substantially perpendicular to the surface of said substrate, and fourth portions extended from the ends of said third portions in the same plane as said third portions in the direction substantially parallel to the surface of said substrate, said fourth portions being fixed to said supporting rods in the neighborhood of the end of extension of said fourth portions;

wherein each of said first portion, said second portions and said third portions has a rim member provided along at least a part of edges thereof, said rim members having a predetermined height extending in the direction substantially perpendicular to the surfaces of said first, second and third portions, respectively.

4,251,747

ONE PIECE ASTIGMATIC GRID FOR COLOR PICTURE TUBE ELECTRON GUN

Glen A. Burdick, Waterloo, N.Y., assignor to GTE Products Corporation, Stamford, Conn.

Filed Nov. 15, 1979, Ser. No. 94,515

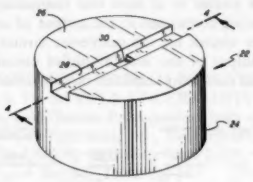
Int. Cl.³ H01J *1/46, 17/04, 19/38, 19/40*

U.S. Cl. 313—348 **8 Claims**

1. A one piece, astigmatic grid for a cathode ray tube electron gun comprising: a functional grid area defined by a given perimeter and having a given thickness; a transverse slot formed in said functional grid area having a depth less than that of said given thickness, said slot having a length which extends entirely across said functional grid area; and an aperture within said slot, said aperture penetrating the remaining part of said given thickness.

6. In a method of making a one piece, astigmatic grid for a cathode ray tube electron gun, the steps comprising: forming a pre-grid with a functional grid area, said functional grid area

having a given perimeter and a given thickness; forming a transverse slot in said functional grid, said slot extending entirely across said functional grid area and having a depth less



than that of said given thickness; and forming an aperture within said slot, said aperture penetrating the remaining part of said thickness.

4,251,748

CAMERA TUBE HAVING PHOTOCATHODE ABSORPTIVE OF SHORTER WAVELENGTH AND FILTER ABSORPTIVE OF LONGER WAVELENGTH LIGHT

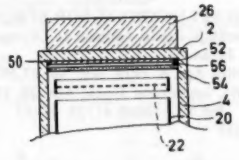
Hendricus F. J. J. van Tongeren; Paulus P. M. Schampers; Willem P. Weijland, and Marino G. Carasso, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 780,168, Mar. 22, 1977, abandoned. This application Mar. 1, 1979, Ser. No. 16,590

Claims priority, application Netherlands, Apr. 12, 1976, 7603828

Int. Cl.³ H01J *31/26, 31/38*

U.S. Cl. 313—371 **9 Claims**



1. A camera tube comprising an envelope having an entrance window, a photo-sensitive target arranged in said envelope at a position such that light passing through said window is incident on one side of said target, said target having a higher light absorption for light of shorter wavelengths than for light of longer wavelengths in the visible spectrum, a signal electrode positioned between said window and said target, means for producing an electron beam for scanning said target, and means for absorbing light selectively with respect to wavelength such that the absorption is substantially 0% at a wavelength of 0.6 μm and substantially 100% at a wavelength of 0.7 μm, said absorbing means being arranged so as to intercept substantially all of the light incident on said target.

4,251,749

PICTURE DISPLAY TUBE HAVING AN INTERNAL RESISTIVE LAYER

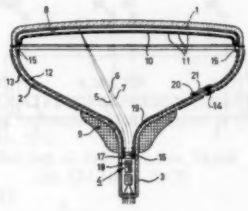
Johannes M. A. A. Compen; Reinhart C. W. Eisses; Constantius J. W. Panis, and Cornelius J. H. Paridaens, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 801,926, May 31, 1977, abandoned. This application Nov. 8, 1978, Ser. No. 958,759

Claims priority, application Netherlands, Jun. 3, 1976, 7605988

Int. Cl.³ H01J *29/88, 31/00*

U.S. Cl. 313—479 **5 Claims**



1. A picture display tube comprising an envelope having a display screen, an electrode system mounted in said envelope for generating at least one electron beam directed onto said screen, a resistive layer poured on at least a portion of the interior surface of said envelope near said electrode system, said layer having a dynamic resistance of at least 300 ohms, a static resistance less than 10,000 ohms and comprising a mixture of graphite particles having an average size less than 2 microns and generally spherical ferric oxide particles having an average size less than 2 microns, and means for electrically connecting said layer to a source of high voltage.

4,251,750

FLUORESCENT LAMP FOR USE IN LIQUID ANALYSIS

John P. Gallien; Francis P. Mackey, both of Danvers; Tadius T. Sadoski, Salem, and Fred R. Taubner, Danvers, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Mar. 28, 1979, Ser. No. 24,650

Int. Cl.³ H01J *61/44*

U.S. Cl. 313—487 **2 Claims**

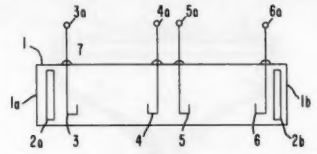
1. A fluorescent lamp comprising a tubular glass envelope having electrodes at each end and containing a filling including inert gas and mercury, the glass envelope having a phosphor coating on its interior surface, said phosphor coating comprising a blend of phosphors that provides predetermined minimum power levels of radiation at predetermined spectral bands that are used in the analysis of liquid samples placed close to the lamp, said predetermined spectral bands being within the spectral range of about 340 to 680 nanometers, said blend of phosphors comprising two ultraviolet emitting narrow band phosphors, two green emitting narrow band phosphors, a wide band phosphor that peaks in the yellow region of the spectrum, and a wide band phosphor that peaks in the red region of the spectrum, said two ultraviolet emitting phosphors being lead activated barium mesosilicate and europium activated strontium fluoroborate, said two green emitting narrow band phosphors being cerium terbium magnesium aluminate and manganese activated gallium magnesium oxide, said yellow wide

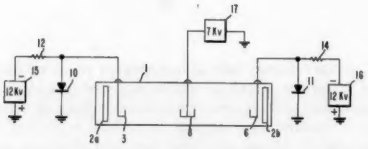
band phosphor being antimony sensitized manganese activated calcium halophosphate, and said red wide band phosphor being tin activated strontium magnesium orthophosphate.

4,251,751
STARTING CIRCUIT FOR A SPLIT SECTION GAS DISCHARGE LASER

William P. Kolb, Carlsbad, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Sep. 27, 1979, Ser. No. 79,403
Int. Cl.³ H05B *41/30*
U.S. Cl. 315—171 **21 Claims**





1. An ignition circuit for a split section gas discharge laser having a gas filled tube and a common anode shared by two cathodes, comprising:

a sustaining voltage source applied to said common anode;

a first ignition voltage source;

a first resistor connected between said ignition voltage source and one of said cathodes;

a first diode connected between said one cathode and ground so as to block current flow from said ignition voltage source to ground;

a second ignition voltage source;

a second resistor connected between said second ignition voltage source and the other of said cathodes; and

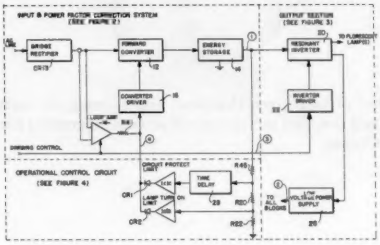
a second diode connected between said other cathode and ground so as to block current flow from said second ignition source to ground, wherein the resistances of said first and second resistors are of sufficient magnitude to substantially isolate said first and second ignition sources from said cathodes, respectively, upon initiation of gas discharge in said laser.

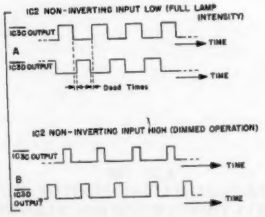
4,251,752
SOLID STATE ELECTRONIC BALLAST SYSTEM FOR FLUORESCENT LAMPS

James B. Stolz, Redwood City, Calif., assignor to Synergetics, Inc., Burlingame, Calif.

Filed May 7, 1979, Ser. No. 36,391
Int. Cl.³ H05B *41/26, 41/29*
U.S. Cl. 315—206 **10 Claims**

1. An electronic solid state ballast system for at least one fluorescent lamp comprising: a rectifier circuit responsive to alternating current power from an alternating current source for producing a direct current voltage; a converter circuit connected to said rectifier circuit and responsive to said direct current voltage for producing a direct current output voltage; an energy storage circuit including a capacitor responsive to the direct current output voltage from the converter circuit to charge the capacitor to a substantially constant direct current voltage level, the capacitor serving to smooth out low frequency ripple in the direct current output voltage from said converter circuit; an inverter circuit connected to said energy storage circuit for converting the direct current voltage level of said capacitor into output pulses of a selected frequency; an output circuit connected to said inverter circuit for coupling said inverter circuit to at least one fluorescent lamp; a loop amplifier circuit connected to the output of said rectifier circuit; a driver circuit for the converter circuit interposed between the output of the loop amplifier circuit and the converter circuit; said loop amplifier circuit controlling the duty



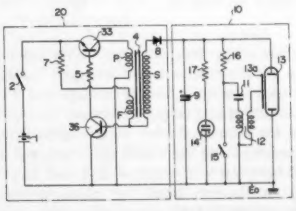


cycle of said converter circuit so as to maintain the input current of the system substantially in phase with the input voltage; a ramp signal source; and an amplifier included in said driver circuit, said amplifier having its input connected to said ramp signal source and to the output of the loop amplifier circuit for comparing the output of the loop amplifier circuit with the ramp signal to change the duty cycle of said converter circuit as the direct current voltage output from the rectifier circuit varies.

4,251,753
POWER SUPPLY CIRCUIT FOR STROBO UNIT

Isao Kondo, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1979, Ser. No. 27,397
Claims priority, application Japan, Apr. 28, 1978, 53/55786
Int. Cl.³ H05B *41/29, 41/32*
U.S. Cl. 315—219 **6 Claims**



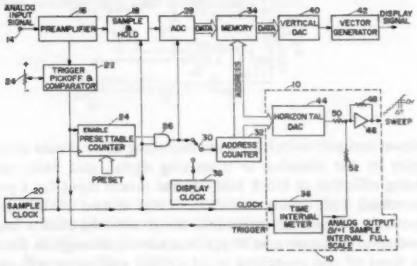
1. A power supply circuit for strobo unit comprising a low voltage d.c. source, an oscillation transformer having a primary winding, a step-up secondary winding and a feedback winding, an NPN transistor connected in series across the

source and the primary winding of the oscillation transformer, a PNP transistor having its base connected with one end of the feedback winding and its collector connected with the base of the NPN transistor, and a rectifier element for rectifying a high voltage which is induced across the secondary winding to feed a flash discharge circuit.

4,251,754
DIGITAL OSCILLOSCOPE WITH REDUCED JITTER DUE TO SAMPLE UNCERTAINTY

Luis J. Navarro, and Thomas P. Dagostino, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 4, 1979, Ser. No. 71,815
Int. Cl.[3] H01J *29/56*
U.S. Cl. 315—370 **9 Claims**



1. A jitter correction circuit for a digital oscilloscope, comprising:

a source of clock pulses having a predetermined clock rate;

means for providing repetitive frames of digital data representative of an analog input signal, said digital data being provided synchronously with said clock pulses;

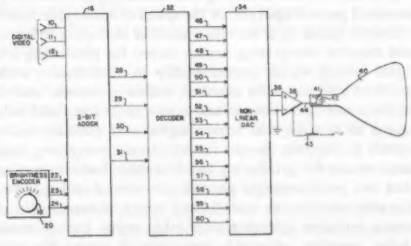
means for measuring the time difference between a fixed point on said analog signal and a successive clock pulse for each frame, and generating offset correction signals proportional thereto; and

means for combining said correction signals with a horizontal drive signal to horizontally shift each frame by the measured value.

4,251,755
CRT DIGITAL BRIGHTNESS CONTROL

Joseph E. Bryden, Framingham, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Jul. 12, 1979, Ser. No. 56,766
Int. Cl.[3] H01J *29/72*
U.S. Cl. 315—383 **18 Claims**



1. In combination:

a cathode ray tube having a nonlinear transfer function;

a first source of first digital signals corresponding to information to be displayed on said cathode ray tube at a plurality of gray shade levels;

a second source of second digital signals corresponding to the intensity range over which said shade levels are to be displayed on said cathode ray tube;

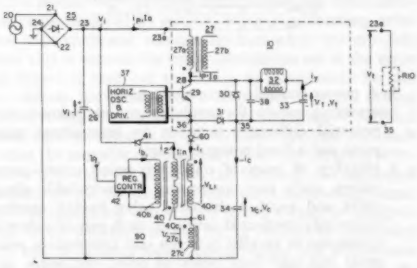
means for producing third digital signals which are a function of said first and said second digital signals; and

a digital to analog converter coupled between said producing means and said cathode ray tube, said converter having an analog output having an amplitude related by a nonlinear transfer function to said third digital signals, said analog output providing gray shade level consecutive steps having substantially equal ratios of luminance of said chathode ray tube for a plurality of different said second digital signals.

4,251,756
REGULATED DEFLECTION CIRCUIT

Donald H. Willis, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 6, 1979, Ser. No. 73,038
Int. Cl.[3] H01J *29/70*
U.S. Cl. 315—411 **8 Claims**



1. A regulated deflection circuit, comprising:

a source of unregulated DC voltage;

a deflection winding;

a trace capacitance coupled to said deflection winding;

a second capacitance coupled to said first capacitance and said source of unregulated voltage;

a first flyback transformer winding coupled to at least one of said trace and second capacitances for charging at least one of said trace and second capacitances from said source of unregulated voltage, the DC value of the voltage across said trace capacitance constrained to assume a value representative of the voltage difference between said unregulated DC voltage and the DC value of the voltage across said second capacitance;

inductance means;

a second flyback transformer winding;

switching means coupled to said deflection winding for applying a trace voltage to said deflection winding for generating a trace deflection current in said deflection winding,

said switching means coupling said second flyback transformer winding and said second capacitance to said inductance means for applying the voltages developed across said second flyback transformer winding and across said second capacitance to said inductance means to generate a current in said inductance means; and

means coupled to said inductance means and responsive to a deflection circuit quantity for controlling the current in said inductance means to effect regulation of said deflection circuit quantity.

4,251,757
POWER CONTROL SYSTEM AND APPARATUS THEREOF

Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

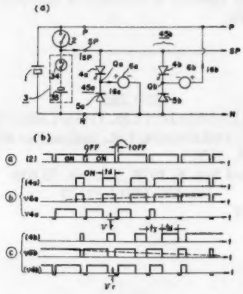
Continuation of Ser. No. 774,546, Mar. 4, 1977, abandoned. This application May 1, 1979, Ser. No. 35,109

Claims priority, application Japan, Jun. 18, 1975, 50-74686; Mar. 3, 1976, 51-22827

The portion of the term of this patent subsequent to Mar. 27, 1996, has been disclaimed.

Int. Cl.³ H02M *7/515;* H02P *5/16*

U.S. Cl. 318—83 **39 Claims**



1. A power control system comprising:

intermitting means for applying an intermittent positive potential difference between an intermittent potential point and a fixed potential point;

a plurality of pairs of oppositely-poled series-connected valves, each pair comprising a controllable electrical valve and another electrical valve having anodes and commonly connected cathodes, each pair of valves being connected in parallel between said intermittent potential point and said fixed potential point, the anode of said controllable valve connected to said intermittent potential point, and the anode of said other valve connected to said fixed potential point;

a plurality of bidirectional current loads which are respectively connected between the series junctions of each pair of valves and said fixed potential point and which are independently driven; and

a reverse potential intermittent auxiliary means connected between said intermittent potential point and said fixed potential point and comprising an auxiliary power source having a positive potential terminal connected to said fixed potential point and an auxiliary solid state switch connected in series between said auxiliary power source and said intermittent potential point.

4,251,758
CONTROL CIRCUIT FOR A SELF-STARTING ELECTRIC MOTOR

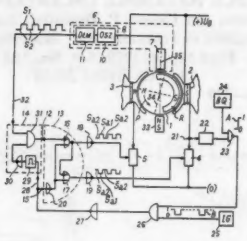
Hans-Kristian Pedersen, Nordborg; Frode Sorensen, Sonderborg, and Jorgen Hyldal, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Feb. 15, 1979, Ser. No. 12,339

Int. Cl.³ H02P *6/02*

U.S. Cl. 318—254 **5 Claims**

1. A self starting electric motor assembly comprising a permanent magnet rotor, a stator with first and second windings in parallel having DC supply and ground terminals, first and second controllable switch elements in respective series with said windings, motor operating means for producing push-pull switching signals having a switching point at a predetermined angular position before the neutral position of said rotor, means providing a static magnetic field distribution between said stator and said rotor so that said rotor assumes a resting point at a predetermined angular position before the neutral position of said rotor, means having a switching input and a gating input and first and second outputs connected respectively to said first and second switch elements, said outputs being alternately set and cleared in syncronism with push-pull switching signals applied to said switching input when said gating input is gated, starting and running means for gating said control means, modulation means between said starting and running



means and said switching input including delay means actuated only by the initiation of a starting signal, said delay means being effective to block said control means input for a predetermined time during which time one of said switching elements is on and the associated stator winding effects biasing said rotor in the reverse direction a substantial angular distance in front of said switching point so that said rotor will gain a substantial starting momentum in the driving direction pursuant to the turning on of the other of said switching elements at the termination of said time.

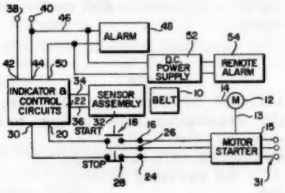
4,251,759
RELATIVE MOTION MONITOR

Robert R. Boldt, Taylor Ridge, Ill., assignor to Agridustrial Electronics, Inc., Bettendorf, Iowa

Filed Aug. 8, 1977, Ser. No. 822,433

Int. Cl.³ H02P *3/08*

U.S. Cl. 318—490 **8 Claims**



1. A monitor for detecting and indicating at least one predetermined percentage ratio of the speed of a movable member to a desired speed, said movable member including drive means, said monitor comprising: sensor means for producing a sensor signal which varies systematically in accordance with said speed of said movable member, indicator means, and circuit means connected between said sensor means and said indicator means to receive said sensor signal and produce indication signals in response thereto for selectively energizing said indicator means for producing an observable indication of said at least one predetermined percentage ratio of said speed of said movable member to said desired speed, wherein said circuit means includes operator adjustable input circuit means includes operator adjustable input circuit means for adjusting input circuit means for adjusting said sensor signal to a predetermined level representing 100% of said desired speed of said movable member when said movable member is at said desired speed, said predetermined level being the same for any desired

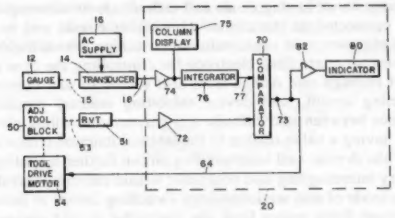
speed, said input circuit means thereby converting said sensor signal to an input signal whose value is proportional to the percentage ratio of the movable member speed to the desired speed, said monitor further including shutdown circuit means coupled between said input circuit means and said drive means and responsive to said input signal for de-energizing said drive means when the ratio of the speed of said movable member to the desired speed is at or below a second predetermined percentage which is less than or equal to said first predetermined percentage ratio and wherein said circuit means further includes means for disabling said shutdown circuit means for a predetermined period of time following energization of said drive means for allowing said movable member to come up to speed and timing means coupled with said shutdown circuit means for disabling said shutdown circuit means at a predetermined time interval after de-energization of said drive means, thereby re-energizing said drive means.

4,251,760

GAUGING AND TOOL CONTROL SYSTEM FOR PRODUCTION OF IDENTICAL PARTS

Richard C. Gersch, Traverse City, Mich., assignor to Subco, Inc., Traverse City, Mich.

Filed Jun. 30, 1978, Ser. No. 920,707
Int. Cl.[3] G05B *19/30*
U.S. Cl. 318—604 **9 Claims**



1. A machine tool control system for performing a machining operation on a workpiece to duplicate a master part comprising:

a gauge including transducer means providing output signals representing the dimension of a master part;

an adjustable tool block having a machine tool mounted thereto for adjustment by said tool block for positioning a machine tool with respect to a workpiece;

a source of electrical signals representing the position of said machine tool;

comparator means for comparing signals from said transducer means and from said source of signals for providing and error output signal when the position of the machine tool is different than that required to duplicate said master part;

indicator means coupled to said comparator means for indicating the existence of said error signal;

means for controlling said adjustable tool block to move said machine tool to a position for duplicating said master part when the error signal is indicated; and

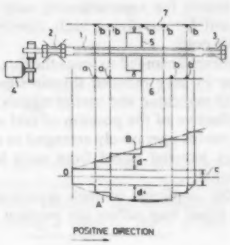
an integrator coupling said transducer to said comparator to provide an average level signal to said comparator such that said machine tool is adjusted for the average dimension of the master part.

4,251,761

NUMERICAL CONTROL ERROR COMPENSATING SYSTEM

Tsuyoshi Inoue, Hino, Japan, assignor to Fujitsu Fanuc Limited, Hino, Japan

Filed Apr. 2, 1979, Ser. No. 26,303
Claims priority, application Japan, Apr. 3, 1978, 53-39030
Int. Cl.[3] G05B *11/01*
U.S. Cl. 318—630 **11 Claims**



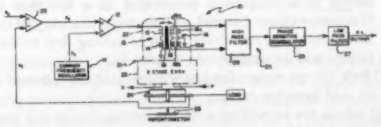
1. A numerical control error compensating system having an error setting means for setting error information corresponding to the position of a movable machine part, the error information being obtained by premeasuring a positioning error relative to a command value, such that when the movable machine part is moved, the error information set in the error setting means is read out therefrom to compensate for the error, wherein the improvement comprises an error setting means for setting error information corresponding to forward and backward movements of the movable machine part such that when the movable machine part is moved the error information is provided for each of the forward and backward movements of the movable machine part; integrating means, operatively connected to said error setting means, for integrating the error information and for providing an integrated output, said integrating means comprising a first compensate counter for counting error information resulting from the forward movement of the movable machine part and a second ompensate counter for counting error information resulting from the backward movement of the movable machine part; backlash means, operatively connected to said integrating means, for providing a backlash constant representing the amount of backlash, wherein when the movable machine part is moved upon application of the command value, the error compensation is achieved based on the error information read out from the error setting means corresponding to the commanded direction of movement of the movable machine part, and that when the direction of movement of the movable machine part is reversed, the integrated output of the integrating means is added to the backlash constant for error compensation.

4,251,762

ARMATURE POSITION DETECTOR

Leonard J. Williams, East Aurora, N.Y., assignor to Moog Inc., East Aurora, N.Y.

Filed Mar. 16, 1979, Ser. No. 20,951
Int. Cl.[3] G05B *1/06*
U.S. Cl. 318—653 **7 Claims**



1. In a valve including an electromagnetic driver having a

drive coil arranged to be supplied with a relatively low frequency drive signal and adapted to produce a magnetic field in response to said drive signal, having an air gap, and having an armature with a portion thereof arranged in said air gap and adapted to be moved by said magnetic field, the improvement which comprises: sensing means for sensing the position of said armature, said sensing means including

an oscillator for generating a relatively high frequency carrier signal exceeding the dynamic response capability of said valve;

summing means for superimposing said carrier and drive signals and for supplying such superimposed signals to said drive coil;

detecting means arranged to sense the flux in said air gap and operative to have induced therein signals similar in frequency to said drive and carrier signals but having amplitudes reflective of the position of said armature; and

separation means operatively arranged to separate such high frequency induced signal from such low frequency induced signal;

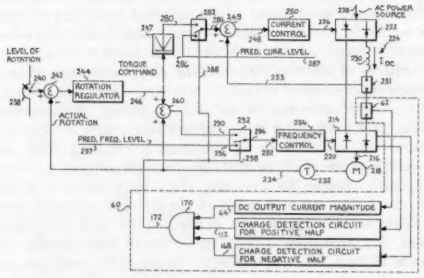
whereby the amplitude of such separated high frequency induced signal may reflect the position of said armature.

4,251,763

COMMUTATING CAPACITOR CHARGE DETECTION CIRCUIT AND METHOD

Loren H. Walker, Salem, and John H. Cutler, Roanoke, both of Va., assignors to General Electric Company, Salem, Va.

Filed Apr. 24, 1979, Ser. No. 32,938
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—803 **20 Claims**



1. An electric motor drive apparatus having an AC electric motor producing a rotation in response to a drive current of variable magnitude and frequency comprising:

(a) means for establishing a rotation reference signal proportional to a desired level of rotation;

(b) means for generating an actual rotation signal proportional to said rotation;

(c) means for generating a torque command signal representative of any difference between said rotation reference signal and said actual rotation signal, and for producing a frequency control signal and a current control signal as functions of said torque command signal;

(d) a variable DC current source for providing a DC output current having a magnitude varied in response to said current control signal;

(e) inverter means for supplying said drive current to said motor at a frequency controlled as a function of said frequency control signal and having a plurality of conduction controlled rectifying devices having first power electrodes and second power electrodes;

(f) link circuit means for connecting said DC current source to said inverter means;

(g) means for providing a first reference signal at a predetermined level;

(h) means for providing a first control signal when the voltage across the respective first and second power electrodes of at least one of the conduction controlled rectifying devices is greater than said first reference signal; and

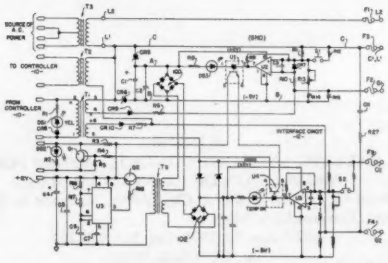
(i) means responsive to said first control signal for generating an output signal, the absence of which being effective to force said magnitude of said DC output current below a predetermined magnitude value and being effective to prevent generation of said frequency control signal.

4,251,764

INTERFACE CIRCUIT FOR INTERCONNECTING AN ELECTRONIC CONTROLLER TO A RESISTANCE WELDING MACHINE

James K. Mathews, Van Nuys, Calif., assignor to Pertron Controls Corporation, Canoga Park, Calif.

Filed Apr. 26, 1979, Ser. No. 33,453
Int. Cl.³ H02H *7/127*
U.S. Cl. 323—320 **10 Claims**



1. A circuit for intercoupling a controller to a current consuming circuit, and which includes at least one semiconductor switching device having anode and cathode electrodes respectively connected to the current consuming circuit and to a source of power, said semiconductor switching device including a current-controlling electrode for controlling the flow of current through said device from said source to said current consuming circuit, said device exhibiting internal junction resistance between said cathode and current-controlling electrodes having a value related to the internal junction temperature of the device, said intercoupling circuit further including: circuitry intercoupling said controller to said current-controlling electrode of said semiconductor switching device to introduce timed firing pulses from the controller to said current-controlling electrode; a bridge network connected to said current-controlling and cathode electrodes of said semiconductor switching device such that said junction resistance of said device forms a part of said bridge network; power supply means connected to said bridge network for supplying an exciting potential thereto; and an output circuit connected to said bridge network to detect when said junction resistance of said semiconductor switching device reaches a predetermined threshold.

4,251,765

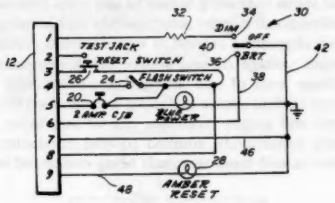
AIRCRAFT ELECTRICAL SYSTEM TESTER

Shawn P. Mears, Dover, Del., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Feb. 7, 1979, Ser. No. 10,109
Int. Cl.³ G01R *31/02*
U.S. Cl. 324—51 **1 Claim**

1. A portable electrical inspection device for testing caution controller systems in aircraft comprising a housing; a plug having a plurality of pins mounted on the housing adapted to be connected to a caution control system; a plurality of lights mounted on the housing; a plurality of switches mounted on the housing; an electrical circuit within the housing connected between said plug and said lights and switches and including a

circuit breaker connected between one pin and ground; a three way switch connected between two pins and the circuit breaker, an on-off switch and a momentary switch connected



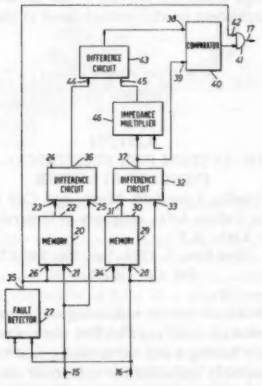
between two pins, and a light connected between one pin and ground;, whereby action of the switching will test circuits external to the device and cause lights to indicate external circuit conditions.

4,251,766

METHOD AND APPARATUS FOR DETERMINING THE DIRECTION OF A FAULT ON A POWER TRANSMISSION LINE

Michel Souillard, Fontenay aux Roses, France, assignor to Enertec, Montrouge, France

Filed Feb. 8, 1978, Ser. No. 876,110
Claims priority, application France, Feb. 9, 1977, 77 03569
Int. Cl.³ G01R *31/08;* H02H *3/26*
U.S. Cl. 324—52 **40 Claims**



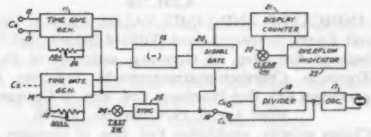
1. A method for determining the direction of a fault on an A.C. electrical power transmission line with respect to a measurement point located on said line, comprising the steps of: producing a first signal which is a function of a value of the complex voltage U at the measurement point after the appearance of the fault; producing a second signal which is a function of a value of the complex voltage U_m at the measurement point before the appearance of the fault; combining the first signal with the second signal to obtain a third signal which is a function of U and U_m; and obtaining an indication of the direction of the fault with respect to the measurement point as a function of said third signal.

4,251,767

DUAL CHANNEL CAPACITANCE MEASUREMENT DEVICE

Donald M. Montana, 27 Woodberry Rd., New Hartford, N.Y. 13413

Filed Aug. 25, 1978, Ser. No. 937,021
Int. Cl.³ G01R *27/26*
U.S. Cl. 324—60 C **1 Claim**



1. A dual channel capacitance measurement device providing a display of the capacitance of the device under test without the inclusion of stray capacitances, comprising:

a. means for generating a train of clock pulses of known frequency;

b. means for generating a first time interval gate proportional to the capacitance of the device under test including stray capacitances;

c. means for generating a second time interval gate proportional to the said stray capacitances;

d. means for synchronizing the said first time gate means and the said second time gate by the said train of clock pulses;

e. means for subtracting the said second time interval gate from the said first time interval gate and providing a third time interval gate proportional to the capacitance of the device under test;

f. means cooperating with the said third time interval gate and the said train of clock pulses for gating a number of said clock pulses responsive to the said third time interval; and

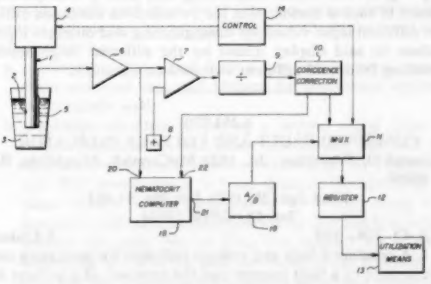
g. means for counting and displaying the said number of gated clock pulses.

4,251,768

COINCIDENCE CORRECTION OF HEMATOCRIT IN A HEMATOLOGY MEASUREMENT APPARATUS

Henry R. Angel, and Bernard O. Bachenheimer, both of Fairfield, Conn., assignors to Hycel, Inc., Houston, Tex.

Filed Sep. 29, 1978, Ser. No. 947,663
Int. Cl.³ G01N *27/00*
U.S. Cl. 324—71 CP **12 Claims**



1. In a hematocrit measurement apparatus comprising peak detector means for responding to sensor pulses and means for incrementing an accumulation means in accordance with pulse levels sensed by said peak detecting means, the improvement of hematocrit coincidence correction means comprising first means coupled for receiving inputs indicative of the produc-

tion of coincidence correction pulses insertable into a red blood cell pulse train to correct red blood cell count for coincidence and second means coupled said first means and responsive to an input from said first means for providing an output to control incrementing of said accumulation means by an amount in addition to the incrementing thereof in response to a sensor pulse.

4,251,769

INDICATOR AND LIMIT VALUE ALARM DEVICE

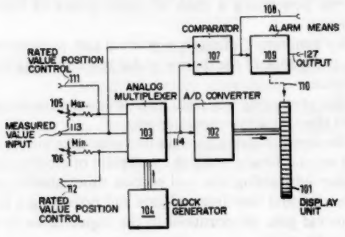
Horst Ewert, Schoeneck, and Wilfried Schäel, Bad Homburg, both of Fed. Rep. of Germany, assignors to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG, Bad Homburg, Fed. Rep. of Germany

Filed Apr. 5, 1979, Ser. No. 27,496

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1978, 2816302

Int. Cl.[3] **G01R** *13/00;* **G08B** *21/00*

U.S. Cl. 324—96 **11 Claims**



1. An indicator and limit value alarm circuit arrangement, comprising analog multiplexing means **(103)** including input means **(105, 106; 111, 112, 113)** for supplying input values including measured value representing signals, rated value representing signals, and limit value representing signals to said analog multiplexing means **(103)**, clock generator means **(104)** operatively connected to said analog multiplexing means **(103)** for sequentially processing said signals through said analog multiplexing means, said clock generator means providing a clock signal having a clock frequency above the resolution of the human eye, display means **(101)** comprising a plurality of display elements arranged in a row, analog-to-digital converter means **(101)** operatively interconnecting said display means to said analog multiplexing means whereby any one of said display elements may be energized sequentially, said clock frequency assuring a simultaneous display to the observer, said clock generator means controlling said analog multiplexing means in such a manner that the switched-on durations differ for different input values for distinguishing said different input values on said display means by the different brightnesses resulting from said different switched-on durations.

4,251,770

COMBINED FAULT AND VOLTAGE INDICATOR

Edmund O. Schweitzer, Jr., 1520 McCormick, Mundelein, Ill. 60060

Filed Jun. 25, 1979, Ser. No. 51,402

Int. Cl.[3] **G01R** *19/14*

U.S. Cl. 324—133 **8 Claims**

1. A combined fault and voltage indicator for indicating the occurrence of a fault current and the presence of a voltage in an alternating current conductor, comprising, in combination:

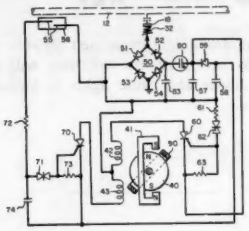
a housing adapted for mounting on said conductor;

status indicating means within said housing having reset-indicating and fault-indicating states discernible from the exterior of said housing;

fault detecting means within said housing responsive to the occurrence of a fault current in the conductor for conditioning said status indicating means to said fault indicating state;

reset circuit means within said housing periodically operable from an applied unidirectional current for conditioning said status indicating means to said reset indicating state;

a unidirectional current source within said housing operable from alternating current in said electrical conductor, the output voltage of said source being dependent on the voltage level of said alternating current, said unidirectional current source including a rectifier network having input and output terminals, one of said input terminals being capacitively coupled to said conductor and the other of said input terminals being connected to ground,



and a first capacitor connected across said output terminals; and

voltage indicating circuit means within said housing comprising a gas-discharge lamp visible from the exterior of said housing, and a second capacitor, said discharge lamp and said second capacitor being connected in series between said output terminals of said rectifier network, and said reset circuit means being connected across said second capacitor, whereby said periodic operation of said reset circuit periodically discharges said second capacitor and said discharge lamp periodically conducts to recharge said second capacitor, the rate of said periodic conduction being dependent on the voltage level in the conductor.

4,251,771

MAGNETIC SYSTEM FOR ELECTRICAL CURRENT INDICATING METER

William J. Schultz, Lynnfield, Mass., and Carl F. Van Bennekom, Green Valley, Ariz., assignors to General Electric Company, New York, N.Y.

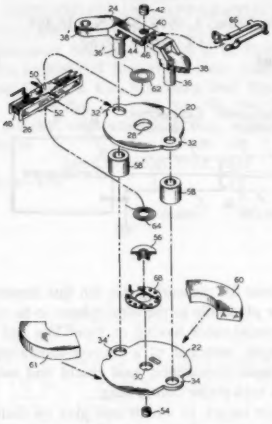
Filed Oct. 2, 1978, Ser. No. 948,172

Int. Cl.[3] **G01R** *1/20*

U.S. Cl. 324—150 **5 Claims**

1. In an electrical current indicating meter mechanism having an inner and an outer parallel flux plate, a pair of pivots, a rotor assembly having a coil surrounding said inner flux plate, said rotor assembly mounted for rotational movement in the same plane as said inner flux plate, a pair of bearings, at least one permanent magnet positioned on the side of said outer flux plate facing said inner flux plate, means for supplying current to the coil of the rotor assembly, a non-magnetic frame member having two parallel projecting studs for securing thereto the inner and outer parallel flux plate, said rotor assembly being mounted for rotation on said pair of pivots with one of said pivots extending to the bearing affixed to the frame member and the other pivot extending to the bearing affixed to the outer flux plate wherein the improvement comprises a pair of non-magnetic spacer posts and at least one flux conducting member positioned in symmetrical counterposed relationship to said permanent magnet on the side of said outer flux plate

facing said inner flux plate, said inner and outer flux plates being separated by said non-magnetic spacer whereby the



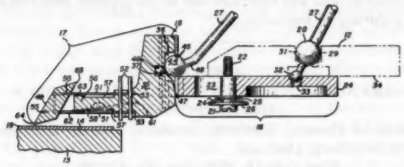
return flux path from the permanent magnet passes through said flux conducting body.

4,251,772

PROBE HEAD FOR AN AUTOMATIC SEMICONDUCTIVE WAFER PROBER

Daniel A. Worsham, San Jose; Jack E. Ashley, Cupertino, and Joseph M. Munoz, San Jose, all of Calif., assignors to Pacific Western Systems Inc., Mountain View, Calif.

Filed Dec. 26, 1978, Ser. No. 972,820
Int. Cl.[2] G01R *31/02, 31/22*
U.S. Cl. 324—158 P **4 Claims**



1. In a probe head means for an automatic semiconductive wafer prober of the type including a probe holder means for holding a plurality of said probe head means in a certain test pattern of positions relative to each other for electrically probing a certain pattern of test points on a semiconductive wafer being tested as the wafer is held to a chuck, and including means for effecting relative movement between the probe holder and the chuck to bring the pattern of probe heads into testing engagement with the pattern of test points on the wafer; the improvement wherein said probe head means includes:

probe body means for coupling to said probe holder means;

testing head means for coupling to said probe body means to be carried from said holder means via the intermediary of said probe body means, and including a probe portion for making electrical contact with a respective test point in the pattern of test points on the semiconductive wafer being tested;

first adjustment means for effecting first relative movement between said probe means and said probe holder means in two orthogonal directions in a plane parallel to the surface of the wafer being tested to obtain a horizontal adjustment of the relative position of said probe portion in the certain test pattern;

second adjustment means for effecting relative movement between said testing head means and said probe body means in a direction generally perpendicular to the plane of the surface of the wafer being tested, to obtain a vertical adjustment of the relative position of said probe portion in the certain test pattern, such vertical adjustment being independent of said horizontal adjustment;

way means operatively associated with said testing head means and probe body means for guiding movement of said testing head means relative to said probe body means; and

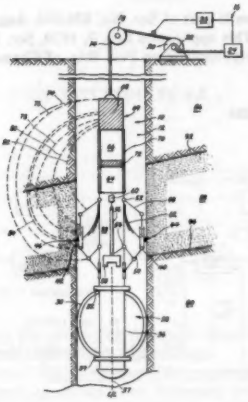
said way means including a spring clip having a spring biased channel portion formed therein to define said way means for slideably receiving one of said probe body means and said testing head means, and means for fixedly securing said spring clip means to the other one of said probe body means and said testing head means.

4,251,773

METHOD AND APPARATUS FOR EXPLORATION OF GEOLOGICAL FORMATION TILT IN BOREHOLES

Michel Cailliau, Asnieres, and Philippe Vincent, Versailles, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 14, 1978, Ser. No. 915,424
Claims priority, application France, Jun. 24, 1977, 77 19486
Int. Cl.[3] G01V *3/18, 3/24*
U.S. Cl. 324—347 **28 Claims**



1. A method of investigating characteristics of an earth formation penetrated by a borehole, employing substantially identical transducers traversing different paths on the borehole wall, comprising:

a. producing a first signal from a first measurement transducer mounted on a pad adapted for application against the borehole wall;

b. contemporaneously producing a second signal from a second measurement transducer substantially identical to said first transducer and mounted on said pad alongside said first transducer at a fixed distance therefrom in a plane normal to the direction of movement along the borehole, said transducers mounted on said pad following side-by-side paths spaced from one another by a fixed separation which is less than the radius of the borehole as said pad and transducers are moved along said borehole, each of said measurement transducers providing a generally identical investigation representative of formation characteristics immediately adjacent the respective transducer over at least a continuous portion of said borehole and along said side-by-side paths, said signals differing when said characteristics adjacent each of said transducers differ;

recording said first and second signals in a manner adapted for comparing their likeness at a given depth to determine lateral characteristics in said formation between said side-by-side paths;

automatically comparing said first and second signals to provide an indication of lateral differences between said signals for various displacements therebetween, said displacements corresponding to different depths along the borehole, to determine the depth displacement corresponding to the best likeness and in response thereto recording an indication of lateral characteristics which is a function of said best likeness and determined displacement.

4,251,774

INTERNAL COMBUSTION ENGINE IGNITION SYSTEM TEST APPARATUS

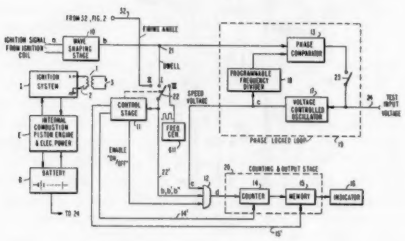
Jürgen Knödler, Remshalden-Grunbach, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 820,844, Aug. 1, 1977, abandoned. This application Feb. 9, 1979, Ser. No. 10,815

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636677

Int. Cl.[3] **F02P** *17/00*

U.S. Cl. 324—384 **18 Claims**



1. Internal combustion engine ignition test system comprising

means (**10**) generating a signal train (b) derived from the primary or low-voltage portion of the ignition system of the engine;

a conjunctive gate (**12**);

a frequency multiplier (**19**) connected to and controlled by said signal train and providing a sequence of output pulses (c) having a pulse repetition rate which is a multiple of the frequency of said signal train, said multiple sequence being applied to said conjunctive gate (**12**) to an input thereof;

means (**21**; **30–33**; **611**, **24**) generating an enabling pulse train representative of a parameter to be tested;

means (**22**) applying the pulses of said pulse train to another terminal of said conjunctive gate (**12**) to pass a plurality of said output pulses through said gate in dependence on the other of the pulses of said enabling pulse train;

a counting and output stage (**20**) connected to and controlled by said conjunctive gate (**12**) and including a counter (**14**) counting the number of output pulses delivered from said gate during any one pulse of said enabling pulse train;

and a digitial indicator (**16**) providing a digital display of said counted number.

4,251,775

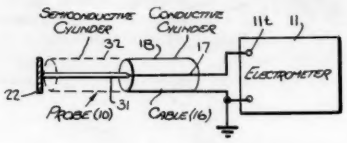
ION FLUX DENSITY PROBE

Thomas J. Michel, Hialeah, Fla., assignor to Santek, Inc., Hollywood, Fla.

Filed Mar. 1, 1979, Ser. No. 16,487

Int. Cl.[3] **G01N** *27/62*

U.S. Cl. 324—464 **11 Claims**



1. An instrument for measuring gas ion flux density constituted by a probe placeable in the atmosphere to be tested and coupled by a coaxial cable having an inner line and an outer shield to the input terminal of a current-indicating device having a high input impedance, said shield and said device being grounded, said probe comprising:

A. a conductive target, to which ions give up their charge, supported at one end of a barrel formed of dielectric material, said target being connected by a conductor passing through said barrel to a terminal at the other end of the barrel making electrical contact with the inner line of said cable; and

B. a semi-conductive layer coated on the surface of said barrel and extending to the lower end thereof to effect a connection with the shield of said grounded cable, said layer providing a controlled leakage path extending between the target and the shield that approximates the characteristics of the atmosphere and the input impedance of the device, whereby the presence of the probe in the atmosphere gives rise to no perturbations in the localized electric field and therefore has no perceptible effect on the accuracy of measurement.

4,251,776

ARRANGEMENT FOR RAISING A SIGNAL TO A HIGHER POWER

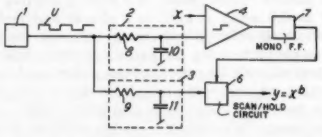
Henning M. Hansen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Feb. 15, 1979, Ser. No. 12,220

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1978, 2806596

Int. Cl.[3] **G06G** *7/20*; **H03K** *17/00*

U.S. Cl. 328—144 **4 Claims**



1. A circuit assembly for converting a signal x to a different power with a selectable exponent, comprising, first and second transfer means time dependent exponential transfer functions f_1 and f_2 respectively with $f_2=f_1^b$, a square wave generator connected to the inputs of said first and second transfer means, comparator means having first and second inputs with said first input connected to the output of said first transfer means and said second input connected to a source for said signal x, scanning and holding means connected to the output of said second transfer means for sampling an instantaneous level thereof, and trigger means connected to said comparator for gating said

scanning and holding means to output said instantaneous level as an instantaneous value x^b.

4,251,777

METHOD OF AND APPARATUS FOR TIME-STABILIZATION OF SAMPLING PULSES

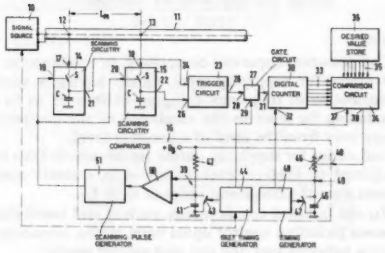
Wilfried Sartorius, Steinen, and Don J. R. Stock, Schopfheim-Langenau, both of Fed. Rep. of Germany, assignors to Endress u. Hauser GmbH u. Co., Maulburg, Fed. Rep. of Germany

Filed Sep. 20, 1978, Ser. No. 944,169

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1977, 2743410

Int. Cl.³ H03K *5/13, 5/22*

U.S. Cl. 328—155 **13 Claims**



1. A method of time-stabilization of periodic scanning pulses for the electronic stroboscopic scanning of periodically recurring signals, where the scanning pulse period differs from the signal period by a fixed small difference in time, characterized in that the periodically recurring signals are transmitted over a transmission line in which is inserted a measuring section of known length, that the signals transmitted over the transmission line are scanned stroboscopically by means of the scanning pulses, that the number of scans during the part corresponding with the traverse of the measuring section, of the time-transformed signals obtained by the scanning is counted and compared with a given desired value and that the scanning pulse period is regulated in the direction of elimination of the deviations from a predetermined result of comparison.

4,251,778

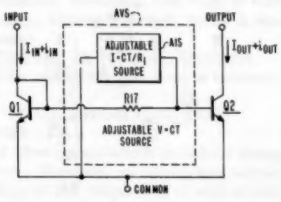
CIRCUIT WITH ELECTRICALLY CONTROLLED GAIN

Adel A. A. Ahmed, Clinton Township, Hunterdon County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1979, Ser. No. 23,965

Int. Cl.³ H03G *3/30*

U.S. Cl. 330—279 **8 Claims**



1. A gain control circuit comprising:

input, output, and common terminals;

first and second transistors of like conductivity type arranged to operate at similar absolute temperatures close to temperature T, having respective collector electrodes respectively connected to said input terminal and to said output terminal, having respective emitter electrodes connected to said common terminal, and having respective base electrodes;

direct coupled collector-to-base feedback means between the collector and base electrodes of said first transistor for conditioning said first transistor to conduct as collector current substantially all of any current applied to said input terminal;

adjustable voltage source means for providing a voltage substantially directly proportional to T between the base electrodes of said first and second transistors.

4,251,779

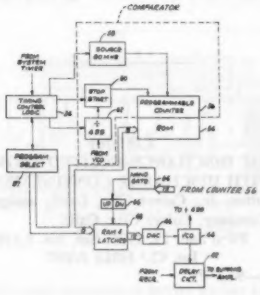
FREQUENCY SYNTHESIZER APPARATUS AND METHOD IN ULTRASONIC IMAGING

Seeley C. Kellogg, Durham; Philip J. Peluso, and Richard B. Bernardi, both of Cheshire, all of Conn., assignors to Picker Corporation, Cleveland, Ohio

Division of Ser. No. 879,236, Feb. 21, 1978, Pat. No. 4,169,385. This application Dec. 18, 1978, Ser. No. 970,662

Int. Cl.³ H03L *7/08*

U.S. Cl. 331—1 A **10 Claims**



1. A system for producing precisely frequency controlled clocking signals, said system comprising:

(a) a frequency adjustable source for producing a succession of the clocking signals to be frequency controlled;

(b) a reference generator having means for producing a reference signal representing a predetermined reference frequency;

(c) comparator circuitry connected to the reference generator and to the source for sampling the electrical signals and having means for comparing their frequency with the reference frequency and for producing an error signal indicating a characteristic of the difference between the reference and sampled signal frequencies, and

(d) correction circuitry including a random access memory and having means for subsequently adjusting the frequency of the clock signals in response to the error signal.

4,251,780

STRIPE OFFSET GEOMETRY IN INJECTION LASERS TO ACHIEVE TRANSVERSE MODE CONTROL

Donald R. Scifres, Los Altos; Robert D. Burnham, Los Altos Hills, and William Streifer, Palo Alto, all of Calif., assignors to Xerox Corporation, Stamford, Conn.

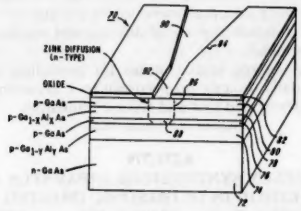
Filed Jul. 3, 1978, Ser. No. 921,530

Int. Cl.³ H01S *3/19*

U.S. Cl. 331—94.5 H **22 Claims**

1. An injection laser comprising a multilayer planar struc-

ture wherein at least one layer thereof is an active waveguiding layer in the plane of the p-n junction for light wave propagation under lasing conditions between cleaved facets at opposite ends thereof, means to confine the current concentration to a defined region of the active layer to thereby restrict the propagating beam in the active layer to the transverse mode, said current confining means being aligned perpendicular relative



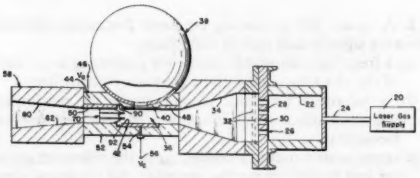
to said cleaved facets, a perturbational offset geometry included in the configuration thereof at least at one point along the length thereof with offset sufficient to stabilize the optical beam such that the light power output versus current pumping characteristic is linear over an extended range of operating currents characterized in that said offset geometry comprises a trapezoidal section coupled to a straight section.

4,251,781

ELECTRIC DISCHARGE-EXCITED FLOWING GAS LASER WITH DISCHARGE CONFINEMENT SHIELD

Leroy V. Sutter, Jr., Culver City, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Jan. 22, 1979, Ser. No. 5,119
Int. Cl.³ H01S *3/097*
U.S. Cl. 331—94.5 PE **17 Claims**



1. In an electrically excited laser wherein a laser gas is caused to flow along a gas flow channel and through an excitation region of said channel in which an electric discharge is established along a direction transverse to the direction of gas flow and into which an electron beam is introduced along said direction transverse to the direction of gas flow, the improvement comprising:

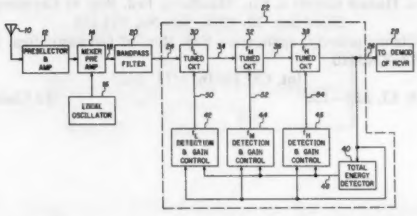
discharge confining means disposed across said gas flow channel in the path of the flowing laser gas adjacent to the downstream end of said excitation region and including at least one plate-shaped member having an upstream edge located approximately at the downstream end of said excitation region, said plate-shaped member being oriented with its broad surfaces transverse to the direction of said discharge, for preventing said discharge from spreading along said gas flow path downstream from said excitation region.

4,251,782

MULTIPLE TUNED CIRCUIT CORRECTION APPARATUS

Brian T. Bynum, Dallas, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jan. 17, 1979, Ser. No. 4,090
Int. Cl.³ H04B *3/04*
U.S. Cl. 333—18 **6 Claims**



1. Compensation apparatus comprising, in combination:

first means for supplying input signals having a spectral distribution of frequency components from f_L to f_H and including f_M wherein the amplitude of the components may vary from the ideal of a constant level;

second means for supplying output signals which have been adjusted to remove level variations in spectral components over the frequency range of f_L to f_H;

f_L, f_M and f_H tuned circuit means, each of said tuned circuit means including control signal input means, connected in series between said first and said second means;

reference level detection means, connected to said second means, for supplying a reference level signal indicative of total energy passed by said tuned circuit means;

f_L, f_M and f_H detection circuit means each connected to said second means and to said reference level detection means to receive inputs from said second means indicative of the adjusted signal after passage through said tuned circuit means and to receive said reference level signal, each of said detection circuit means including output means for providing output control signals indicative of the deviation of signals received at frequencies f_L, f_M and f_H respectively, from said reference level; and

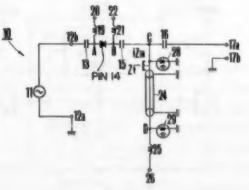
means connecting said output means of each of said detection means to a corresponding control signal input means of said f_L, f_M and f_H tuned circuit means.

4,251,783

VARIABLE RESONANCE TYPE AMPLITUDE EQUALIZING CIRCUIT

Takahiko Yamada, Tokyo, and Kozo Morita, Yokosuka, both of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph and Telephone Public Corporation, both of Tokyo, Japan

Filed Apr. 4, 1979, Ser. No. 26,988
Claims priority, application Japan, Apr. 4, 1978, 53-39842
Int. Cl.³ H03H *7/03*
U.S. Cl. 333—28 R **5 Claims**



1. An amplitude equalizing circuit comprising a variable

resistance device having first and second terminals connected between one of a pair of input terminals and one of a pair of output terminals, a common terminal connected to the other ones of said input and output terminal pairs, a distributed constant line connected between said common terminal and one of said first and second terminals of said variable resistance device, a pair of variable capacitance means connected between said common terminal and both ends of said distributed constant line, and means for controlling said variable resistance device and said variable capacitance means for varying the steepness and the center frequency of the amplitude equalizing characteristic of said amplitude equalizing circuit.

4,251,784

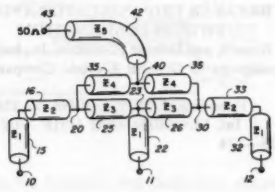
APPARATUS FOR PARALLEL COMBINING AN ODD NUMBER OF SEMICONDUCTOR DEVICES

Roland C. Luetzelschwab, and Patrick E. Bartell, both of Bedford, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 17, 1979, Ser. No. 89,066

Int. Cl.³ H01P *5/12*

U.S. Cl. 333—127 **13 Claims**



13. Apparatus for parallel combining an odd number of semiconductor devices through connections to a similar terminal of each device, the apparatus comprising:

(a) means for positioning the devices generally in-line so as to provide two end devices and at least one intermediate device;

(b) pluralities of transmission line segments;

(c) a plurality of initial combining points equal to one less than the number of devices being combined, said initial points being defined intermediately between each adjacent pair of devices by the juncture of transmission line segments extending from each similar terminal of the devices adjacent the initial combining points and a transmission line segment extending to a next level of combining, the impedance of the transmission line segments being such as to cause current in each of the intermediate devices to flow equally at each of the two initial combining points adjacent thereto; and

(d) adjacent pairs of combining points being connected by transmission line segments joined to form a combining point in a next level of combining with the final level of combining having a single combining point therein.

4,251,785

INTEGRATED FILTER CIRCUIT

Hans-Joerg Pfleiderer, Zorneding, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

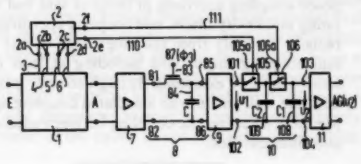
Filed Jun. 22, 1979, Ser. No. 51,119

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1978, 2838006

Int. Cl.³ H03H *15/02, 19/00*

U.S. Cl. 333—165 **13 Claims**

1. Integrated filter circuit which includes a charge transfer device transversal filter and an output-side sample-and-hold stage, comprising on the output side of said sample-and-hold stage, a further low pass filter which includes a first capacitor, a second smaller capacitor whose capacitance is significantly smaller than the capacitance of said first capacitor, first and second alternately actuable electronic switches, a transfer circuit leading via said first switch for said second capacitor



and a transfer circuit proceeding via said second switch for a series connection formed of said two capacitors.

4,251,786

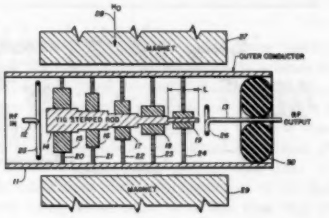
STEPPED-ROD FERRITE MICROWAVE LIMITER HAVING WIDE DYNAMIC RANGE AND OPTIMAL FREQUENCY SELECTIVITY

Harry Goldie, Randallstown, and Steven N. Stitzer, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 6, 1979, Ser. No. 55,425

Int. Cl.³ H01P *1/218, 1/23*

U.S. Cl. 333—17 L **5 Claims**



2. A multiple stage microwave ferrite limiter biased to subsidiary resonance and having an input power and a threshold power for each stage, the said limiter comprising a plurality of successive stages, having the same resonant frequency, of decreasing size wherein the said decreasing stage size is fabricated to provide a constant ratio of input to threshold power for each stage throughout the said limiter.

4,251,787

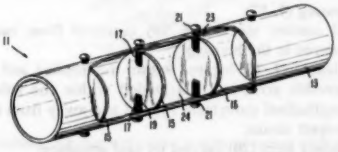
ADJUSTABLE COUPLING CAVITY FILTER

Frederick A. Young, Huntington Beach, and Charles F. Montgomery, Paradise, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 19, 1979, Ser. No. 21,645

Int. Cl.³ H01P *1/20*

U.S. Cl. 333—209 **7 Claims**



1. An adjustable coupling microwave cavity filter, comprising:

a plurality of tandemly disposed, relatively high Q filter cavities each defined by spaced planar end walls disposed

in a tubular side wall and orthogonally oriented with respect to the longitudinal axis of the side wall;

coupling means including at least one pair of oppositely-disposed coupling apertures in those of said end walls separating said cavity filters, said coupling apertures extending radially inwardly from the outer edge of said end walls, said coupling means also including at least one tuning screw movably extending through an appropriate hole in said side wall and into an associated coupling aperture for precisely adjusting the coupling between adjacent ones of said filter cavities.

4,251,788

ELECTROMAGNETIC SOLENOID OPERATED SWITCH, PARTICULARLY STARTER SWITCH FOR AUTOMOTIVE ENGINES

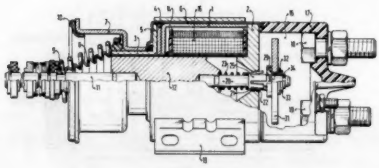
Otto Barthruff, Stuttgart; Martin Mayer, Sersheim, and Martin Sprenger, Vaihingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

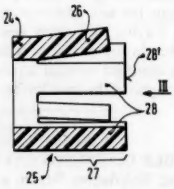
Filed Jul. 16, 1979, Ser. No. 58,073

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1978, 2835407

Int. Cl.[3] **H01H** *3/60*

U.S. Cl. 335—157 **9 Claims**





1. Automotive starter switch having

a housing (**1, 17**);

fixed contact means (**18, 19**) insulated from each other, secured in the housing;

a solenoid (**1, 15**) located within the housing and having a movable armature (**12**) guided within the solenoid for longitudinal movement toward and away from said fixed contact means;

a contact stem (**20**) carried by said armature;

movable contact means (**29-31**) carried by said contact stem to engage said fixed contact means upon energization of the solenoid;

spring means (**9, 23**) biassing the armature, and the movable contact means carried thereby away from the fixed contact means;

and a guide element (**2**) within the housing formed with a guide opening (**21**) therein to guide the contact stem upon reciprocating movement of the armature,

and comprising, in accordance with the invention,

a resiliently deformable clamping bushing means (**25, 35**) located on the contact stem and movable with respect thereto, said bushing means comprising

an essentially cylindrical portion (**24, 36**) surrounding the contact stem and fitting within the opening (**21**) and the guide element (**2**),

resiliently deflectable and radially outwardly divergent spreader element (**26, 37**) projecting in axial direction from said cylindrical portion;

and axial positioning means (**27, 28; 38**) positioning said bushing partly within said opening when the solenoid is deenergized to permit the radially resilient portions to accurately and securely hold the stem in position within the opening even in the presence of shock or vibration.

4,251,789

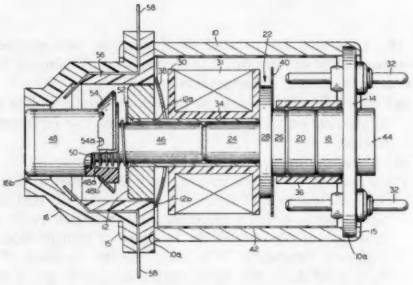
CIRCUIT BREAKER TRIP INDICATOR AND AUXILIARY SWITCH COMBINATION

Ronald R. Russell, and Donald F. Aitken, Jr., both of Plainville, Conn., assignors to General Electric Company, New York, N.Y.

Filed Sep. 4, 1979, Ser. No. 72,376

Int. Cl.[3] **H01H** *9/20;* **H01F** *7/08*

U.S. Cl. 335—174 **17 Claims**



1. An electromagnetic device comprises, in combination:

A. a casing of magnetically permeable material;

B. a first end wall formed of magnetically permeable material and having a central opening therein;

C. a cap of insulating material secured with said first end wall in one end of said casing, said cap extending beyond said first end wall and having a central opening in registry with the opening in said first end wall;

D. a second end wall of magnetically permeable material secured in the other end of said casing;

E. a plunger of magnetically permeable material slidingly received in said opening in said first end wall for reciprocating movement between a retracted position and an extended position with one end thereof protruding through and outwardly beyond said opening in said cap;

F. a spring biasing said plunger to its extended position;

G. a permanent magnet positioned within said casing intermediate the other end of said plunger and said second end wall, said magnet developing holding flux to retain said plunger in its retracted position against the bias of said spring;

H. an electromagnetic coil energizeable by a pulse of current to develop flux in opposition to said holding flux, thereby empowering said spring to propel said plunger to its extended position;

I. a pair of contacts mounted within said cap in electrically isolated relation, each said contact electrically connected with a separate conductive lead-in strip having an electrical termination external to said casing facilitating connection with an external signalling circuit; and

J. a conductive shorting member carried by said plunger for movement into bridging electrical contacting engagement with said contact pair when said plunger assumes its extended position.

4,251,790

MAGNETIC FOCUSING AND DEFLECTION SYSTEM FOR ELECTRON BEAM TUBES

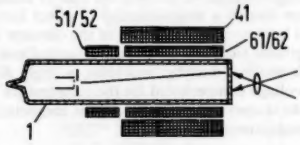
Ilse Lucas, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 26, 1979, Ser. No. 15,462

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1978, 2811265

Int. Cl.³ H01H *100*

U.S. Cl. 335—213 **7 Claims**



1. A magnetic focusing and deflection system for beam deflection in electron beam tubes, comprising: a beam source means for emitting an electron beam; a target positioned to receive the beam; a deflection coil system which is subdivided such that a first set of deflection coil means is arranged on a beam source means side of the tube for effecting a directional change of the beam emerging from the beam source means and a second set of deflection coil means is arranged on a target side for adapting a focusing field to a linearly extended direction of the beam emerging from a field of the first set of deflection coil means; and an electrically independent focusing coil means which is arranged around the second set of deflection coil means for producing said focusing field.

4,251,791

MAGNETIC BASE

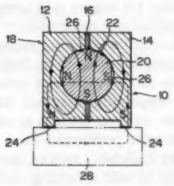
Kiyoshi Yanagisawa; Mamoru Uchikune; Mutsukazu Tagami, all of Ueda; Taketo Shimizu, Nagano; Kunio Horiuchi, and Hiroo Sakaguchi, both of Ueda, all of Japan, assignors to Kanetsu Kogyo Kabushiki Kaisha, Ueda, Japan

Filed Aug. 9, 1979, Ser. No. 64,991

Claims priority, application Japan, Dec. 8, 1978, 53-150993

Int. Cl.³ H01F *7/02*

U.S. Cl. 335—302 **6 Claims**



1. In a magnetic base including an elongate magnetic circuit block consisting of a pair of magnetic members each having a magnetically active surface, a nonmagnetic member interposed between the two magnetic members, with portions of said block defining an elongate generally cylindrical cavity extending longitudinally through said block, wherein the improvement comprises an improved elongate, generally cylindrical permanent magnet disposed in the cavity of the magnetic circuit block to rotate around its longitudinal axis and in alignment with the longitudinal axis of the cavity so as to place the magnetically active surfaces into an excited state or an unexcited state, said permanent magnet being composed substantially entirely of a material having a small reversible permeability, and said permanent magnet occupying substantially the entire volume of the cavity of the magnetic circuit block.

4,251,792

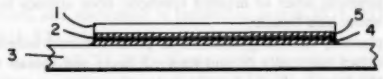
THERMISTOR BONDED TO THERMALLY CONDUCTIVE PLATE

George A. Ball, Jr., Cape Elizabeth, Me., assignor to GTE Products Corporation, Stamford, Conn.

Filed May 3, 1979, Ser. No. 35,562

Int. Cl.³ H01C *7/04*

U.S. Cl. 338—22 R **4 Claims**



1. A thermistor assembly comprising a disc type thermistor, a layer of a low thermal expansion alloy rigidly bonded to the thermistor, said layer of low thermal expansion alloy comprising a disc of an alloy containing nickel and iron, and a thermally conductive plate rigidly bonded to the low thermal expansion alloy, the coefficient of thermal expansion of the thermally conductive plate being greater than that of the thermistor, the coefficient of thermal expansion of the thermal expansion alloy being about equal to or less than that of the thermistor, whereby cracking of the thermistor as a result of thermal cycling during normal operation is substantially eliminated.

4,251,793

PTC RESISTOR

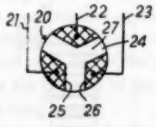
Holger V. Vind, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed May 9, 1979, Ser. No. 37,526

Claims priority, application Fed. Rep. of Germany, May 13, 1978, 2821206

Int. Cl.³ H01C *7/02*

U.S. Cl. 338—22 R **7 Claims**

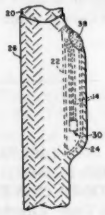


1. A resistor having a resistance which varies with temperature, comprising, a body of a substantially honogeneous cold conductor material, three connector pads bonded to said body at positions spaced from each other, said pads being of equal size and shape relative to each other, and each said pad being equally spaced from the other two of said pads.

4,251,794
FLEXIBLE LINEAR THERMAL ARRAY

Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 10, 1979, Ser. No. 101,965
Int. Cl.³ H01C *7/04*
U.S. Cl. 338—26 **10 Claims**

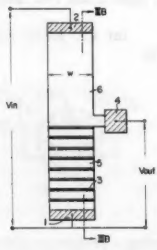


1. A flexible, linear, condition responsive array comprising:
an elongated bundle including a multiplicity of electrical conductor pairs;
a strength layer of braided synthetic fiber strands formed about said bundle;
a plurality of tubing sections of predetermined length disposed externally of said strength layer and spaced along the length of said bundle at locations corresponding to condition sensing stations of said array;
each of a plurality of said conductor pairs having end portions extending outwardly through said strength layer and being loosely disposed in a corresponding one of said tubing sections;
a protective layer formed around said strength layer and said tubing sections; and
a plurality of condition sensing means each disposed in a respective one of said tubing sections and connected to said conductor end portions therein.

4,251,795
SEMICONDUCTOR MAGNETORESISTIVE ELEMENT HAVING A DIFFERENTIAL EFFECT

Ichiro Shibasaki; Kaoru Ohmura, and Takeo Kimura, all of Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Nov. 29, 1978, Ser. No. 964,554
Claims priority, application Japan, Nov. 29, 1977, 52-142240
Int. Cl.³ H01L *43/08*
U.S. Cl. 338—32 R **18 Claims**

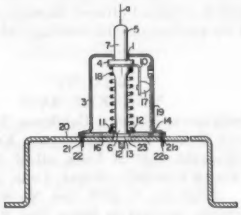


1. A small-size, semiconductor magnetoresistive element for providing a differential output in response to an applied magnetic field, comprising:
(a) an insulating substrate,
(b) a magnetoresistive portion comprising an elongated thin layer composed of a high-mobility semiconductor material and attached to the insulating substrate,
(c) two input terminals comprising first and second electrodes respectively disposed at opposite ends of the semiconductor layer of the magnetosensitive portion in ohmic contact therewith,
(d) an output terminal comprising an intermediate electrode connected to the magnetosensitive portion and in ohmic contact therewith between said first and second electrodes,
(e) a plurality of shorting bars composed of an electrically conductive material and disposed in an electric isolation from each other on said semiconductor layer only between said first and intermediate electrodes, and
(f) wherein said shorting bars are disposed to define adjoining patterned and non-patterned sections on the magnetosensitive portion and the intermediate electrode is disposed at the boundary of these sections, whereby in response to application of a uniform magnetic field over the entire magnetosensitive portion the rate of change in the resistance due to a magnetoresistive effect between the first and intermediate electrodes of the element is considerably greater than that between the second and intermediate electrodes, thereby providing a high differential output voltage compensated for the temperature variation due to the temperature variation in the magnetoresistance of the magnetosensitive portion.

4,251,796
SLIDE-TYPE POTENTIOMETER

Katsuji Soeda; Mitsuhiro Oyama, and Fumio Sakuma, all of Sukagawa, Japan, assignors to Yamamoto Electric Industrial Co., Ltd., Fukushima, Japan

Filed Mar. 15, 1979, Ser. No. 20,840
Claims priority, application Japan, Apr. 18, 1978, 53-51172[U]
Int. Cl.³ H01C *10/38*
U.S. Cl. 338—176 **3 Claims**



1. A slide-type potentiometer comprising:
(a) an actuating rod member movable reciprocatably in the longitudinal directions thereof,
(b) a spring member for urging said actuating rod member in one of said longitudinal directions,
(c) an electrical contact supporting member mounted on said actuating rod member so as to be movable in said longitudinal directions along with said actuating rod member, said contact supporting member having an electrical contact member secured thereto at one end thereof,
(d) a resistor element positioned such that said electrical contact member is slidably moved on said resistor element upon movement of said actuating rod member,
(e) a housing member for enclosing said contact supporting member and said resistor member, said housing member having a through-hole through which one end portion of said actuating rod member extends outwardly and at least two first terminal members projecting from the bottom thereof and electrically connected to said resistor element, and

(f) a guide member for said spring member, wherein said guide member has a second terminal member projecting beyond the bottom of said housing member and electrically connected to said electrical contact member by way of said spring member and said contact supporting member.

4,251,797

VEHICULAR DIRECTION GUIDANCE SYSTEM, PARTICULARLY FOR INTERCHANGE OF INFORMATION BETWEEN ROAD MOUNTED UNITS AND VEHICLE MOUNTED EQUIPMENT

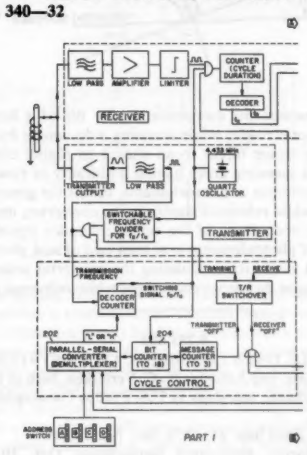
Peter Bragas, Hildesheim, and Bernd Eschke, Detfurth, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

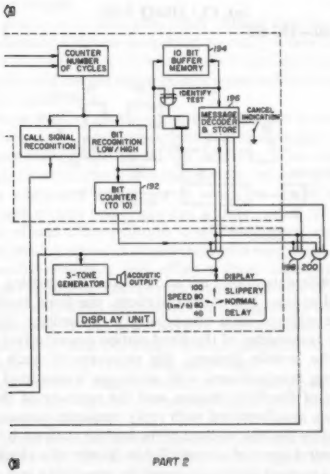
Filed Jul. 12, 1977, Ser. No. 814,901

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1976, 2631543

Int. Cl.[3] **G08G** *1/00*; **G08C** *21/00*

U.S. Cl. 340—32 **7 Claims**





1. Vehicular direction guidance system to guide a vehicle for movement over a highway (**10**) forming part of a highway network to a destination, or target comprising

vehicle mounted equipment means forming a traffic and direction communication arrangement and

road electronic equipment units distributed at various points on the highway network,

said road electronic equipment units including an induction loop and embedded in the road surface of the highway;

the vehicle mounted equipment means located on the vehicle including information display means and an antenna located on the vehicle to provide exchange of information between the road equipment unit and the vehicle equipment means to pass information back and fourth by inductive coupling between the induction loop and the antenna

said vehicle having means providing a destination address for transmission to the road equipment units

and the road equipment units after receiving information from the vehicle mounted equipment means defining a destination, providing routing information to reach said destination to the vehicle mounted equipment means for display by said display means,

wherein

a plurality of road electronic equipment units are located at highway intersections (**K1 . . . K5**) of said highway network and associated in respective groups (**S11, S12 . . . S14; S21, S24 . . . S,54**);

the loops (**12, 72, 114**) of said units extending across the highway (**10**) and covering opposed directions of movements of vehicles over the highway,

direction recognition circuit means are provided decoding signals received from the antenna and providing an output signal determinative of the direction of movement of the vehicle in the highway network;

the units of one group (e.g. **S21, S22 . . . S24**) associated with any one intersection (e.g. (**K2**)) having the same intersection code (e.g. I) associated therewith,

the coding (I, II, III) of adjacent sequential intersections (**K1, K2 . . . K5**) along the highway network being different;

storage means associated with the vehicle mounted equipment means and storing the coding of the code of the road equipment unit sensed by the antenna then being passed;

vehicle mounted means controlling the transmission of a previously stored code (e.g. II) of a prior road equipment unit (e.g. **S12**), together with the destination code of desired destination for the vehicle to the next subsequent road equipment unit (e.g. **S21**) from the antenna of the vehicle mounted equipment means to the loop of the road electronic equipment unit (e.g. **S21**) to be passed;

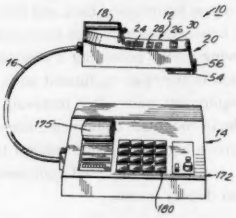
road located means controlling transmission to the vehicle mounted equipment means of the code (e.g. I) of the road equipment unit (e.g. **S21**) then being passed together with the information representative of movement and direction to reach said destination, and controlling replacing the previously stored code (II) of the prior road equipment unit (**S12**) with the code (I) of the road equipment unit (e.g. **S21**) then being passed;

and decode means connected to the respective road electronic equipment units and sensing road equipment codes, and providing an enabling output signal permitting transmission of the destination information only if the code of the destination differs from the code associated with the respective road equipment unit.

4,251,798
PORTABLE LASER SCANNING ARRANGEMENT FOR AND METHOD OF EVALUATING AND VALIDATING BAR CODE SYMBOLS

Jerome Swartz, Stonybrook; Shelley A. Harrison, Dix Hills; Edward Barkan, Bayshore; Frank Delfine, Farmingville, all of N.Y., and George Brown, Oquossoc, Me., assignors to Symbol Technologies, Hauppauge, N.Y.

Filed May 31, 1978, Ser. No. 911,171
Int. Cl.[3] G06K 9/24
U.S. Cl. 340—146.3 SY 37 Claims



1. In a laser scanning system for evaluating and validating bar code symbols, a portable laser scanning head comprising:

(a) means on said head for directing a laser light beam towards a bar code symbol for reflection therefrom;

(b) means on said head for detecting the intensity of the light reflected from the symbol, and for generating an electrical signal indicative of the detected intensity of the reflected light;

(c) means on said head for selecting a characteristic of the symbol;

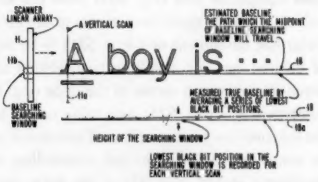
(d) means responsive to selection of the characteristic for decoding the electrical signal, and for generating data descriptive of the decoded signal; and

(e) means on said head for displaying the generated data, whereby the mounting of the displaying means and the selecting means on the head facilitates data reading and characteristic selection at the site of the symbol to be analyzed.

4,251,799
OPTICAL CHARACTER RECOGNITION USING BASELINE INFORMATION

Chentung R. Jih, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 30, 1979, Ser. No. 25,436
Int. Cl.[3] G06K 9/32
U.S. Cl. 340—146.3 H 3 Claims


SCANNER LINEAR ARRAY
A VERTICAL SCAN
ESTIMATED BASELINE THE PATH WHICH THE MIDPOINT OF BASELINE SEARCHING WINDOW WILL TRAVEL
A boy is
MEASURED TRUE BASELINE BY AVERAGING A SERIES OF LOWEST BLACK BIT POSITIONS.
BASELINE SEARCHING WINDOW
HEIGHT OF THE SEARCHING WINDOW
LOWEST BLACK BIT POSITION IN THE SEARCHING WINDOW IS RECORDED FOR EACH VERTICAL SCAN

1. A method for processing image data from a scanning array which scans characters in a scanning direction to locate a baseline, comprising the steps of

calculating a horizontal projection histogram of said characters at a plurality of periodic spaced locations along said scanning direction,

detecting a peak characteristic of each of said histograms, and

averaging said detected peak characterstics of said histograms to produce an estimate of the skew of said baseline with respect to said scanning direction.

4,251,800
TILT COMPENSATING AGC

Medford D. Sanner, Irving, and Ellis K. Cave, Garland, both of Tex., assignors to Recognition Equipment Incorporated, Dallas, Tex.

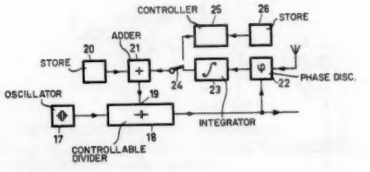
Filed Apr. 12, 1979, Ser. No. 29,496
Int. Cl.[3] G06K 9/22
U.S. Cl. 340—146.3 SY 6 Claims

1. An apparatus for compensating for tilt of a hand-held optical character reader while scanning a document by adjusting the scale factor inpiut to an analog to digital converter comprising, a scanning array having a plurality of rows and a plurality of columns of photoelements; means for generating a plurality of white reference signals in the converter, means for counting the occurrence of the white reference signals from the outputs of photoelements in at least two of said plurality of columns, and means for modulating the converter scale factor input based upon the occurrence of the white reference signals.

4,251,801
MOBILE DATA COMMUNICATION SYSTEM

Willem Le Mair, and Antonius N. C. Vereijken, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 24, 1979, Ser. No. 78,549
Claims priority, application Netherlands, Oct. 10, 1978, 781017
Int. Cl.[3] H04Q 9/00
U.S. Cl. 340—147 SY 3 Claims



1. A mobile data communication system comprising a fixed station and at least two mobile stations, the fixed station and the mobile stations each comprising a transmitter and a receiver, the transmitter of the fixed station consecutively interrogating the mobile stations, the receivers of each mobile station being synchronized with messages transmitted by the transmitter of the fixed station, and the receiver of the fixed station being synchronized with reply messages consecutively transmitted by the transmitters of the mobile stations, by applying to a control input of a controllable divider of a clock signal generator a control signal produced by measuring in a control loop the bit phase difference between each reply message and the clock signals produced by the divider, characterized in that the fixed station comprises; switching means for interrupting the control loop at the beginning of the reception of each reply

message for at least a portion of a bit period, together with control means for applying a control signal to the control input of the controllable divider during said bit period, which control signal corresponds to the bit phase error caused by the propagation time of the message from the fixed station to the mobile station concerned and the reply message from that mobile station to the fixed station.

4,251,802

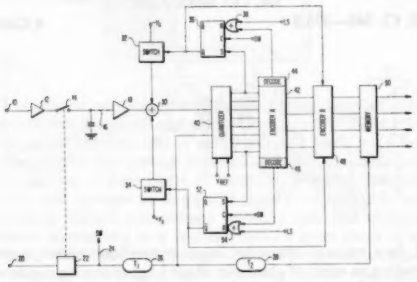
ANALOG TO DIGITAL CONVERTER

Otakar A. Horna, 5017 Del Ray Ave., Bethesda, Md. 20014

Continuation of Ser. No. 665,651, Mar. 10, 1976, abandoned, which is a continuation of Ser. No. 470,781, May 17, 1974, abandoned. This application Dec. 28, 1977, Ser. No. 865,132

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 AD **25 Claims**



1. An analog to digital converter for converting analog signals within a predetermined dynamic range comprising:

(a) quantization means having an input for receiving analog signals and an output for providing quantization output signals representative of the value of said analog signals, provided that said analog signals are within a predetermined mid-range, said mid-range having an upper limit and a lower limit defining a portion of said dynamic range in which said analog signals have a high probability of occurrence, said mid range having a central range and two outer ranges

(b) a source of at least two offset voltage signals,

(c) summation means connected to receive said analog signals and said offset voltage signals for producing an output signal, said output signal being connected to said quantization means input,

(d) range shifting means comprising an input to receive said analog signal, an output connected to said source of voltage signals, a first means for detecting when said analog signal is outside said mid-range, a second means for detecting when said analog signal is within one of said outer ranges of said mid-range and a third means for applying one of said offset voltages to said summation means when said analog signal is outside said mid-range and for subsequently removing said offset voltage when said analog signal is within said predetermined portion of said mid-range, said offset voltage having a magnitude less than the magnitude of the mid-range of said quantizer and being selected to shift the range of said quantizer to a different range which overlaps said mid-range,

(e) first encoder means connected to receive said quantization output signals for producing a first binary coded output signal, and

(f) second encoder means having a first input connected to receive said first binary coded output signal and a second input connected to said output of said range shifting means for adding to said first binary coded output signal a binary number equal to the value of said offset voltage when said analog signal is outside said mid-range for providing a second binary coded output signal representating the digital equivalent of said analog signal.

4,251,803

DYNAMIC ZERO OFFSET COMPENSATING CIRCUIT FOR A/D CONVERTER

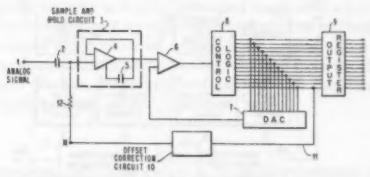
Pierre Debord, Vence, and Jean-Louis Marijon, Le Bar-sur-Loup, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 2, 1978, Ser. No. 912,123

Claims priority, application France, Jun. 30, 1977, 77 207307

Int. Cl.[2] H03K *13/02*

U.S. Cl. 340—347 CC **8 Claims**



1. In an analog device having at least one input and one output and receiving an analog signal with a zero mean value, at said input and supplying at its output a signal having a determined relationship with the input signal, an improved compensation circuit for compensating for the zero offset level introduced into the output signal by the device, comprising:

means for providing a signal indicative of the sign of the output signal with respect to the real zero,

generating means for generating a first control signal during the time-periods when the signs with respect to the offset zero and the real zero are different and when the offset zero crossing in the positive direction precedes the real zero crossing in the positive direction,

generating means for generating a second control signal during the time periods when then signs with respect to the offset zero and the real zero are different and when the real zero crossing in the positive direction precedes the offset zero crossing in the positive direction,

a storage capacitor having a first terminal M and a second terminal connected to a reference voltage,

charging means for charging the capacitor with a current I during the times defined by the first control signal,

discharging means for discharging the capacitor with a current −I during the times defined by the second control signal, and

means for adding the voltage generated at point M in response to the charge and discharge of said storing capacitor, to the input signal.

4,251,804

DELTA MODULATION UTILIZING SELECTABLE PIECEWISE LINEAR WAVEFORM APPROXIMATION

Mark V. Scardina, 2383 - 39th Ave., San Francisco, Calif. 94116, and David A. Bergen, 2101 Shelter Bay Ave., Mill Valley, Calif. 94941

Filed Sep. 18, 1978, Ser. No. 943,420

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 R **7 Claims**

1. A system for obtaining a digital representation of an analog signal, comprising:

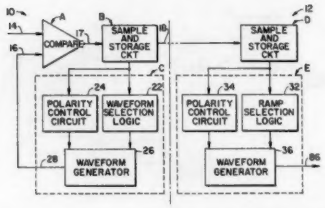
means responsive to the analog signal and a reference signal for developing a binary signal indicative of a predetermined characteristic of the analog signal relative to the corresponding characteristic of the reference signal;

means for periodically sampling the binary signal and for producing the digital representation therefrom, the sampling means including means for storing a plurality of successive samples of the binary signal; and

means coupled to the storing means and responsive to the stored samples for selectively generating one of a plurality

of linear waveforms and for successively combining the linear waveforms generated to form the reference signal;

the generating means including means for providing a predetermined voltage, means having a selectively variable capacitance for integrating the predetermined voltage to develop therefrom from the linear waveforms, selection means responsive to said stored samples for varying the capacitance of said integrating means to determine the slope of each of the linear waveforms generated, and at



least a first and a second sample and hold means coupled to one another and to said integrating means in parallel circuit configuration, each having an input for receiving the linear waveform developed by the integrating means and an output coupled to the integrating means, for alternately sampling the linear waveforms developed by the integrating means and holding instantaneous values of said linear waveform, whereby the successive linear waveform segments are thereby accumulated to form the reference signal.

4,251,805

CIRCUIT ARRANGEMENT FOR AN INPUT KEYBOARD

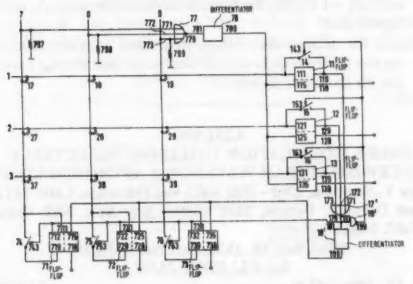
Dieter Holzmann, Freiburg-Munzingen, and Joachim Grosse, Breisach-Guendlingen, both of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Dec. 13, 1978, Ser. No. 969,050

Claims priority, application Fed. Rep. of Germany, Dec. 17, 1977, 2756327

Int. Cl.³ G06F *3/02*

U.S. Cl. 340—365 S **12 Claims**



12. A circuit arrangement for an input keyboard comprising:

first means for switching arranged in m-columns and n-rows, each of said first switching means connecting a respective row with a respective column;

means for each column and each row for storing a signal associated with each column and each row, each said storing means having a set input and a reset;

second switch means for switching said stored signal between an output and said input of each of said storing means;

first means for providing NOR logic from the outputs of said row storing means, said NOR logic applied to said second means for switching of said row storing means through an inverter, applied to said reset of said column storing means through a first differential circuit, and applied to said second means for switching of said column storing means and said set input of said column storing means; and

second means for providing NOR logic from the m-columns, said second means NOR logic applied to said reset of said row storing means through a second differential circuit, whereby the keyboard signals may be derived from the outputs of said storing means.

4,251,806

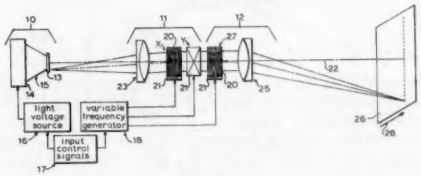
MESSAGE CHARACTER IMAGE PROJECTION CONTROL SYSTEM

Joseph T. McNaney, 8548 Boulder Dr., La Mesa, Calif. 92041

Filed Jan. 23, 1980, Ser. No. 114,674

Int. Cl.³ G08B *5/36*

U.S. Cl. 340—373.3 **6 Claims**



1. In a message character image projection control system including an array of character shaped light forming windows, a source of light and means for exposing, selectively, windows of said array to light from said source, and optical means positioned along an optical axis of said system for effecting, selectively, an optical path relationship between individual windows of said array and said optical axis, wherein the improvement comprises:

(a) said source of light including an array of electrically responsive light emitting elements;

(b) a source of voltage and circuit means for connecting said emitting elements of said array, selectively, to a voltage from said source of voltage;

(c) means for providing an optical relationship between said array of light emitting elements and said array of windows whereby each window will be exposed to light stemming from a corresponding one of the light emitting elements upon the connecting of a voltage from said source to an element;

(d) said optical means including an acoustic wave generator and an interaction medium positioned along said optical axis, and a source of ultrasonic frequency voltages and circuit means for connecting said generator to this source of voltages for an establishing of any of a number of different acoustic wave light reflecting conditions within said interaction medium, each said optical path relationship corresponding, respectively, to each said light reflecting condition;

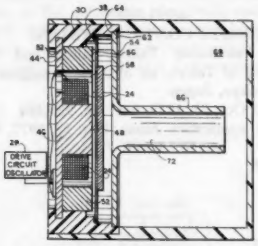
(e) means for connecting a predetermined one of the elements to said source of voltage and, consequently, exposing a corresponding one of the windows to light stemming from said one element, and establishing, simultaneously, a predetermined one of said light reflecting conditions within said medium and a corresponding one of said optical path relationships between said one window and said optical axis;

(f) means for connecting another predetermined one of the elements to said source of voltage and, consequently, exposing another and corresponding one of the windows to light stemming from said other element, and establishing, simultaneously, another predetermined one of said light reflecting conditions within said medium and a corresponding one of said optical path relationships between said other window and said optical axis.

4,251,807
MINIATURE BUZZER

Alan Hofer, Wantaugh, and Frank Yama, North Massapequa, both of N.Y., assignors to Pickering & Company, Plainview, N.Y.

Filed Mar. 8, 1979, Ser. No. 18,849
Int. Cl.[3] G08B 3/10
U.S. Cl. 340—384 R 3 Claims

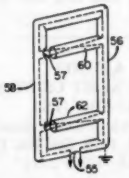


1. A buzzer assembly comprising: a support member, a passage extending through said support member; a first end of said passage; an opposite end of said passage; a knife edge ledge defined within said passage between said ends directed toward said passage; a pole piece of magnetic material positioned within said passage; an elongated portion of said pole piece extending toward said passage opposite end, said elongated portion terminating in a free end spaced apart short of said ledge; a coil within said passage disposed about said elongated portion, said coil having leads extending outside said support member; a magnetic member within said passage disposed about said coil; a diaphragm seated on said knife edge closing said passage; an armature of magnetic material aligned with said elongated portion free end and affixed to said diaphragm opposite to said elongated portion free end; a drive circuit oscillator connected to said coil leads; and a sounding horn, said horn having a flared base portion affixed to said support member, an opening in said base disposed about said passage opposite end, and a tube extending away from said passage opposite end, said tube having a length tuned to the fundamental frequency or a harmonic of said oscillator.

4,251,808
SHIELDED BALANCED LOOP ANTENNAS FOR ELECTRONIC SECURITY SYSTEMS

George J. Lichtblau, 13 Tannery Hill Rd., Ridgefield, Conn. 06877

Filed Nov. 15, 1979, Ser. No. 94,429
Int. Cl.[3] G08B 13/24
U.S. Cl. 340—572 6 Claims

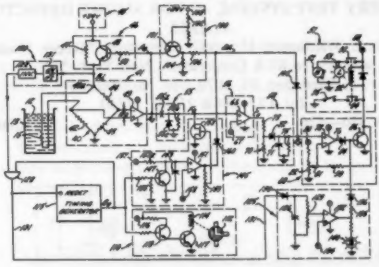


1. For use in an electronic security system having:
transmitter means for providing an electromagnetic field in a predetermined area at a frequency repetitively swept through a predetermined range of frequencies; a resonant tag circuit having at least one resonant frequency within said predetermined range of frequencies; receiver means for detecting the presence of said tag in said electromagnetic field and providing an alarm indication thereof, an antenna system comprising:
a transmitting antenna coupled to the security system transmitter and a receiving antenna coupled to the security system receiver, said antennas being disposed in spaced parallel relationship and between which said resonant tag must pass for detection;
at least one of said antennas having at least two twisted loops lying in a common plane, each loop being twisted 180° to be in phase opposition with each adjacent loop; and
a conductive shield enclosing each twisted loop antenna and including a shorted turn portion enclosing the periphery of the antenna and being grounded to provide a grounded shorted turn, and a crossover shield portion enclosing the crossed conductors of each pair of twisted loops, each cross-over shield portion being insulated from the shorted turn portion to prevent current flow in the crossover shield portion.

4,251,809
METHOD AND APPARATUS FOR DETECTING THE PRESENCE OF WATER IN OIL

Oliver F. Cheney, Philadelphia, Pa., assignor to Alco Standard Corporation, Valley Forge, Pa.

Filed Feb. 16, 1979, Ser. No. 12,959
Int. Cl.[3] G08B 21/00
U.S. Cl. 340—603 22 Claims



22. A system for signaling the presence of a predetermined concentration of water in a bath of oil, said system comprising a temperature sensitive resistor positioned in contact with said bath, means for supplying said resistor with electrical power sufficient to heat the resistor to a predetermined temperature above the vaporization point of water but below the vaporization point of said oil, means for producing a first signal which varies as a function of the change in the resistance value of said resistor when the latter changes temperature in response to the vaporization of water adjacent the resistor, means responsive to said signal for varying the power supplied to said resistor sufficiently to restore said resistor substantially to said predetermined temperature, and means for producing a warning signal when the time-average value of transient pulses in said first signal exceeds a predetermined threshold.

4,251,810
APPARATUS FOR AND METHODS OF REMOTELY MONITORING OUTPUTS OF GEIGER-MUELLER TUBES

David M. Wyatt, Arlington Heights, Ill., assignor to Kay-Ray, Inc., Arlington Heights, Ill.

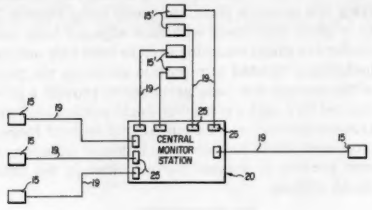
Filed May 30, 1978, Ser. No. 910,910
Int. Cl.[2] G01N 23/12
U.S. Cl. 340—612 29 Claims

1. A method of measuring the output of at least one Geiger-Mueller tube remotely located from a monitoring station comprising the steps of:
(a) transmitting the output of the Geiger-Mueller tube over

a cable attached thereto to the monitoring station without amplification of the signal prior to transmitting;

(b) converting output pulses as received at the monitoring station from the remote Geiger-Mueller tube to a voltage signal proportional to the frequency of the output pulse;

(c) comparing the voltage signal to a reference voltage signal;



(d) producing a trigger signal when the magnitude of the voltage signal approaches and passes the reference voltage; and

(e) triggering a specific indicator with the trigger signal to indicate the occurrence of the trigger signal.

4,251,811

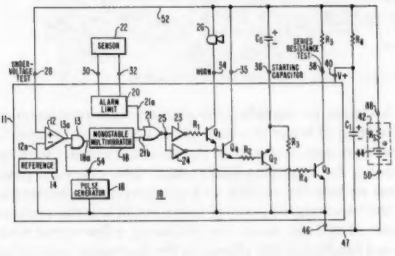
BATTERY TEST SYSTEM, AS FOR SMOKE DETECTOR ALARM

Harold A. Wittlinger, Hopewell Township, Mercer County, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1979, Ser. No. 106,656

Int. Cl.[3] G08B *21/00, 17/10*

U.S. Cl. 340—636 **12 Claims**



1. In a battery powered alarm circuit having first and second battery terminals for receiving a battery potential therebetween, a sensor for detecting an alarm condition, means responsive to said sensor for providing an alarm control signal, an annunciator responsive to said alarm control signal for sounding an alarm, and a capacitor for providing starting current for said annunciator, a test system for determining a high series resistance condition of said battery, said test system comprising:

means for drawing a test current pulse from said battery, said means having a test pulse signal indicating said test current pulse;

switch means having a principal current conduction path, and a control electrode, the potential on said control electrode determining the conductivity of said principal current conduction path, said switch means having its principal current conduction path connected in series with said starting capacitor;

logic control means responsive to said alarm control signal and said test pulse signal, said logic control means having an output terminal connected to the control electrode of said switch means for conditioning said switch means for conduction at least during said alarm control signal, and for conditioning said switch means for nonconduction at least during said test pulse signal, so that said starting capacitor does not discharge substantial current during said test current pulse; and

test means responsive to said test current pulse for indicating a high series resistance condition of said battery.

4,251,812

REMOTE CONTROL SYSTEM

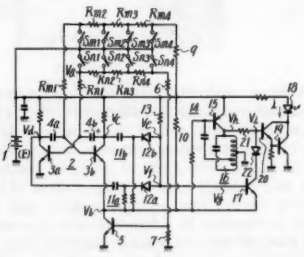
Hisao Okada, Yokohama; Takao Mogi, and Shigetoshi Murakami, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 23, 1978, Ser. No. 953,494

Claims priority, application Japan, Oct. 27, 1977, 52-128916

Int. Cl.[3] H03K *7/08*

U.S. Cl. 340—696 **10 Claims**



1. A command encoding device for a remote control apparatus, comprising:

means for defining a repeating sequence of first time intervals having a first variable length related to a command;

means for defining a repeating sequence of second time intervals contiguous to and alternating with said first time intervals and having a second variable length further related to said command;

means for producing a repeating sequence of first fixed length pulses having a length shorter than said first and second variable lengths and defining a beginning of each of said first time intervals and an ending of each of said second time intervals;

means for producing a repeating sequence of second fixed length pulses having a length different from said length of the first fixed length pulses and shorter than said first and second variable lengths and defining an ending of each of said first time intervals and a beginning of each of said second time intervals; and

means for transmitting said first and second fixed length pulses.

4,251,813

ELECTRONIC CHECKLIST USING SOLID STATE READOUTS

Franklin E. Carre, 4068 Delcon Court, Loveland, Colo. 80537

Filed Mar. 5, 1979, Ser. No. 17,192

Int. Cl.[3] G06F *3/147*

U.S. Cl. 340—706 **2 Claims**

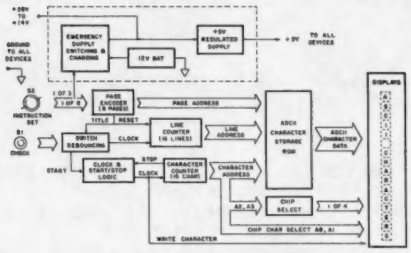
1. In an electronic checklist using solid state readouts, characters of alphanumeric information may be displayed by a means comprised of:

an operator actuated rotary switch, said switch being connected to an encoder, said encoder having an output forming the most significant bits of a read only memory address, each combination of bits delineating a portion of said memory;

an operator actuated momentary switch, said switch being

one of two inputs to a debouncing circuit, said debouncing circuit having two outputs, one of which forms an input to a counter, said counter having an output forming the next most significant bits of said read only memory address, each combination of bits delineating a portion of read only memory address subsequent to portion delineated by output of said encoder;

a second input to said debouncing circuit from said encoder in combination thereof with said momentary switch resulting in the activation of a clock, said clock having an output forming the input to a second counter, said second counter having one of a combination of outputs which deactivates said clock after a prescribed number of clock



pulses, other outputs of said second counter forming the least significant address bits of said read only memory;

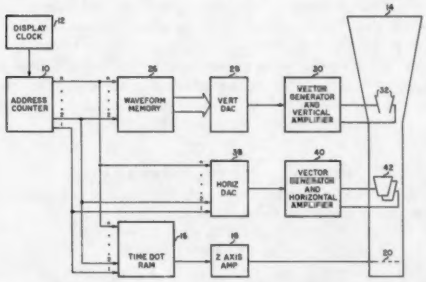
a decoder having inputs derived from outputs of said second counter, said decoder having one of a number of mutually exclusive outputs each forming an input to an alphanumeric display cluster;

alphanumeric display clusters each having an input derived from said read only memory, said decoder, said clock, and said second counter, said read only memory containing encoded alphanumeric data, said decoder providing cluster selection, said second counter providing display character selection, and said clock providing character write commands.

4,251,814
TIME DOT DISPLAY FOR A DIGITAL OSCILLOSCOPE

Thomas P. Dagostino, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 18, 1979, Ser. No. 76,530
Int. Cl.³ G08B 5/36
U.S. Cl. 340—722 **5 Claims**



1. A display system for a digital oscilloscope, comprising:

A waveform memory having a predetermined number of addressable storage locations;

a time dot memory having at least twice the number of addressable storage locations as said waveform memory;

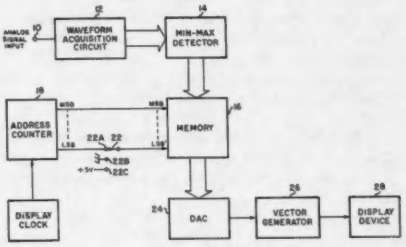
means for addressing both said waveform memory and said time dot memory in synchronism to produce waveform and time dot outputs therefrom respectively, said time dot memory being addressed at a rate at least twice that at which said waveform memory is addressed; and

means for producing a display in which said waveform outputs are displayed graphically and said time dot outputs are superimposed thereon.

4,251,815
SIGNAL-ENVELOPE DISPLAY SYSTEM FOR A DIGITAL OSCILLOSCOPE

Thomas P. Dagostino, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Sep. 18, 1979, Ser. No. 76,531
Int. Cl.³ G08B 5/36
U.S. Cl. 340—722 **7 Claims**



1. A display system for a digital oscilloscope, comprising:

a waveform memory for storing minimum and maximum signal amplitude values in adjacent addressable storage locations.

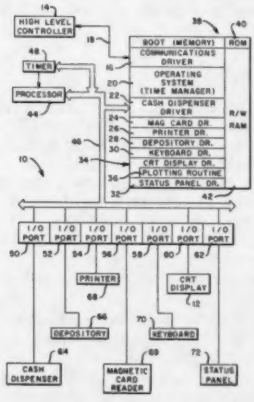
means for addressing said memory to selectively retrieve said minimum and maximum values; and

means responsive to said retreived values for providing a display signal therefrom.

4,251,816
METHOD AND APPARATUS FOR PLOTTING GRAPHICS

Ricky L. Eppley, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 21, 1978, Ser. No. 972,177
Int. Cl.³ G06F 3/14
U.S. Cl. 340—747 **2 Claims**



1. A method of displaying an image on a display device having x and y coordinates therein, in which the image is

formed of a plurality of segments, with each said segment being formed of at least one character, comprising the following steps:

(a) generating a plotting string for the image to be displayed, with the plotting string having a length including a said character and also including a repeat factor and a control factor for each said segment of said image to be displayed, with said repeat factor containing the number of times said character is to be repeated to produce the length of the associated segment and with said control factor containing x and y offsets to establish direction and character intervals for the associated segment;

(b) storing a count representing the length of said plotting string and storing initial x and y coordinates for the start of said image;

(c) decrementing said count by one;

(d) obtaining the repeat factor of the first segment of said image to be displayed and the x and y offsets from its associated control factor;

(e) outputting a character at said initial x and y coordinates;

(f) decrementing said repeat factor for said first segment by one;

(g) adding the x and y offsets from the control factor for said first segment to said initial x and y coordinates to provide a revised cursor position for the second character of said first segment to be displayed;

(h) outputting a character at said revised cursor position;

(i) decrementing said repeat factor for said first segment by one;

(j) repeating said steps (g), (h), and (i) by adding the x and y offsets from the control factor for said first segment to the previous revised cursor position until said step (i) results in a count of zero;

(k) decrementing said count representing the length of said plotting string by two;

(l) repeating said step (d) for the next segment of said image to be displayed;

(m) repeating said steps (h), (i) and (j) for said next segment until said repeat factor therefor is zero;

(n) repeating said step (k) upon the completion of step (m); and

(o) repeating said steps (m) and (n) for each of the remaining segments in said image until said count representing the length of said plotting string is equal to zero whereby for said next segment and for each of said remaining segments of said image, the last character of the immediately prior to said segment which was displayed is repeated as the first character of the segment to be displayed.

4,251,817

MICROWAVE INTEGRATED CIRCUIT DEVICE FOR TRANSMISSION/RECEPTION OF A SIGNAL

Katsuhiro Kimura, Tokyo; Akira Endo, Katsuta; Kenji Sekine, Tokyo; Takahiko Tanigami, Mito, and Yoichi Kaneko, Tokorozawa, all of Japan, assignors to Hitachi, Ltd., Japan

Filed Oct. 18, 1979, Ser. No. 85,952
Claims priority, application Japan, Oct. 20, 1978, 53/128445
Int. Cl.³ G01S *13/00*; H04B *1/44*
U.S. Cl. 343—5 DD **8 Claims**

1. A microwave integrated circuit device comprising:

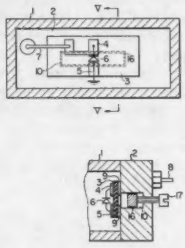
a waveguide circuit;

a short-circuiting member providing a short-circuiting plane for said waveguide circuit and having a groove in said short-circuiting plane;

means for varying dimensions of said groove which have effect on microwave circuit components;

a microwave integrated circuit formed on an insulating substrate so disposed as to cover an opening of said groove; and

a semiconductor element disposed on said microwave integrated circuit to convert the microwave signal in said



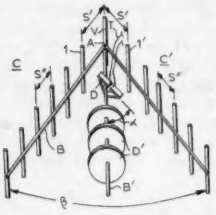
waveguide circuit into a selected one of a d.c. and a low-frequency signal.

4,251,818

CORNER REFLECTOR CIRCULARLY POLARIZED ANTENNA

Victor A. Lander, Highland Park, N.J., assignor to Blonder-Tongue Laboratories, Inc., Old Bridge, N.J.

Filed Dec. 26, 1979, Ser. No. 106,765
Int. Cl.³ H01Q *19/13*
U.S. Cl. 343—819 **10 Claims**



1. A corner-reflector circularly polarized antenna system having, in combination, a corner reflector comprising a pair of pluralities of spaced parallel rods diverging from and parallel to a vertex axis; dipole means connected with transmission line means and oriented in a plane substantially parallel to but at an acute tilt angle to said axis, forward of the same and on a further axis orthogonal to the vertex axis and substantially bisecting the corner reflector; the spacing between the parallel rods at the portions of each of the said pluralities of rods to the sides of the dipole being greater than other rod spacings and adjusted to provide appropriate virtual image dipole action in the reflection from the rods to generate circular polarization.

4,251,819

VARIABLE SUPPORT APPARATUS

Jack M. Vickland, Palo Alto, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Jul. 24, 1978, Ser. No. 927,208
Int. Cl.² H01Q *1/08*
U.S. Cl. 343—882 **16 Claims**

1. A support adjustment apparatus for supporting and moving an antenna load with respect to a base member, said antenna load being symmetric and having a fixed point of rotation off the axis of symmetry of said antenna load, said support adjustment apparatus comprising:

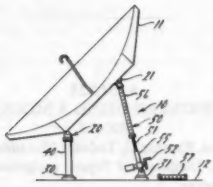
a first suspension point, a second suspension point and a third suspension point associated with the load for permitting movement of the load with respect to said support adjustment apparatus, said first, second and third suspension

points permitting rotation about two axes so that the load has two degrees of freedom of movement with respect to each of said suspension points;

a fourth suspension point, a fifth suspension point and a sixth suspension point associated with the base member so that there is no relative movement of the base member with respect to said fourth suspension point, and said fifth and sixth suspension points permitting two degrees of freedom of movement with respect to the base member;

a first connecting means for connecting said first and fourth suspension points;

a second connecting means for connecting said second and fifth suspension points;



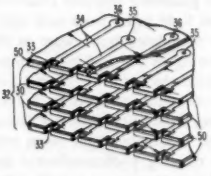
a fourth connecting means for connecting said third and fifth suspension points so that the load can move relative to the base member about two axes, a first axis being defined by said first and fifth suspension points and a second axis being defined by said first and third suspension points, and said first suspension point being positioned at a distance from the edge of the load less than one half the width of the load and said first connecting means having a length less than one half the width of said load thereby providing that the bending load applied to said support adjustment apparatus is applied to a member having a length less than one-half the width of said load and permitting said axis of symmetry to achieve both a horizontal and a vertical orientation with respect to the base member.

4,251,820

SOLDER GLASS BONDED CHARGE ELECTRODE ASSEMBLY FOR INK JET PRINTERS

James N. Humenik, LaGrangeville, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 28, 1979, Ser. No. 108,109
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **17 Claims**



1. A charge electrode for ink-jet printers, comprising:

(a) a pair of matching ceramic substrates each having a like multi-notched edge;

(b) a conductive charge pattern on a first of said substrate and having individual runs with bifurcated portions extending adjacent the edge portions of the projection defining a corresponding notch of said edge,

(c) a fused glass layer "formed from a composition comprising, by weight 56% SiO_2,8% Al $_2O_3$, 8% B_2O_3, 6% BaO 6% PbO, 6% Na_2O_2, 3% Li_2O, and 3% La_2O_3" overcoating and bonded to at least the bifurcations of said pattern and to said first substrate, with

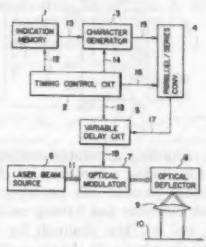
(d) the second said substrate superimposed on and bonded by said fused glass layer to said first substrate to sandwich said pattern therebetween.

4,251,821

CHARACTER RECORDING DEVICE

Tsutomu Kimura, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Oct. 11, 1979, Ser. No. 83,713
Claims priority, application Japan, Oct. 16, 1978, 53-127174
Int. Cl.³ G01D *9/42*; B41B *13/00*; H04N *1/04*
U.S. Cl. 346—108 **2 Claims**



1. A character recording device comprising:

means for scanning effected with a light beam;

means for modulating said light beam in accordance with a dot signal to record characters or the like as dot patterns; and

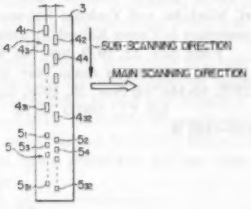
means for varying the pulse width of said dot signal in correspondence with a scanning position of said light beam.

4,251,822

RECORDING HEAD

Kazuyuki Hara, Yokohama, and Takeshi Kamada, Atsugi, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Apr. 17, 1979, Ser. No. 30,895
Claims priority, application Japan, May 15, 1978, 53/57268
Int. Cl.³ G01D *15/16, 15/10*
U.S. Cl. 346—139 C **12 Claims**

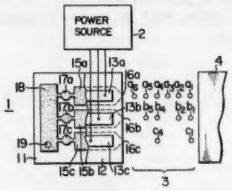


1. In a facsimile apparatus of the type in which there is relative scanning motion in a main scanning direction between a recording head and a recording medium and in which there is relative movement between said head and said medium in a sub-scanning direction perpendicular to said main scanning direction, and the recording head being selectively operable in one of a plurality of line density modes, the improvement comprising: a plurality of sets recording electrodes on said head, each of said sets corresponding to one of a plurality of line density modes, each of said sets being arranged in a plurality of rows spaced apart in said sub-scanning direction, the spacing between said electrodes in each of said sets being substantially equal and being inversely proportional to the line density in the sub-scanning direction.

4,251,823
INK JET RECORDING APPARATUS

Syoji Sagae, Hitachiota, Japan, assignor to Hitachi, Ltd. and Hitachi Koki Co., Ltd., both of, Japan

Filed Aug. 29, 1979, Ser. No. 70,818
Claims priority, application Japan, Sep. 1, 1978, 53-106275
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—140 R 4 Claims



1. An ink jet recording apparatus comprising:.

a nozzle head including a common ink chamber, a plurality of independent parallel ink chambers spaced from the common ink chamber and having each a nozzle aperture at one end, and ink flow channels for communicating the common ink chamber with the respective independent ink chambers;

electrical energy-mechanical energy converting elements associated with the respective independent ink chambers of the nozzle head;

means for applying electrical signals to the respective converting elements to vary the interior volume of the respective independent ink chambers, for causing ink therein to be ejected from the respective nozzle apertures in the form of ink droplets in response to the electrical signals; and

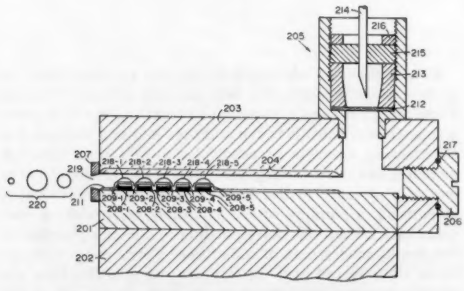
a recording medium opposing the nozzle head to receive the ink droplets ejected from the respective nozzle apertures,

said means for applying the electrical signals to the converting elements causing the electrical signals applied to a plurality of adjoining converting elements of the nozzle head to be rendered mutually out of phase.

4,251,824
LIQUID JET RECORDING METHOD WITH VARIABLE THERMAL VISCOSITY MODULATION

Toshitami Hara, Tokyo; Yasushi Sato, Kawasaki; Yasushi Takatori, Machida, and Yoshiaki Shirato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1979, Ser. No. 93,851
Claims priority, application Japan, Nov. 14, 1978, 53-139980; Nov. 28, 1978, 53-146734; Nov. 28, 1978, 53-146735
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R 8 Claims



1. A liquid jet recording method, which comprises:

controlling thermal energy quantity to be generated by driving predetermined numbers of heat generating bodies selected in accordance with recording informations from a plurality of heat generating bodies which are arranged along flow path in a liquid chamber communicatively connected with a discharge orifice for discharging and spattering liquid droplets in a predetermined direction, and each being driven independently of the other;

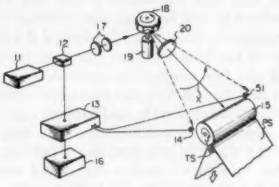
causing said controlled thermal energy to act on the liquid in said liquid chamber to bring about instantaneous change in the state of the liquid to develop foams; and

discharging and spattering the liquid droplets from said discharge orifice for recording.

4,251,825
NON-IMPACT PRINTER USING A MODULATED LIGHT BEAM

Tomohisa Mikami, Kawasaki; Tadashi Matsuda, Yokohama, and Fumitaka Abe, Inagi, all of Japan, assignors to Fujitsu Limited, Tokyo, Japan

Filed Dec. 21, 1978, Ser. No. 971,659
Claims priority, application Japan, Dec. 30, 1977, 52-158422
Int. Cl.[3] G06F *3/14*
U.S. Cl. 346—160 21 Claims



1. A compensating system for a non-impact printer comprising:

a light source for generating a light beam;

a light modulation controller comprising a print timing control pulse generator for generating print timing control pulses and a character generator for generating a character signal in synchronization with said print timing control pulses;

a light modulator, operatively connected to said print timing control pulse generator and said character generator, for receiving said light beam from said light source and for producing a modulated light beam in dependence upon said character signal and said print timing control pulses;

a rotating photoconductor drum having a scanning area;

a light beam reflector, comprising a rotating polygonal mirror, having a plurality of mirror faces, for alternately reflecting said modulated light beam onto said scanning area on said rotating photoconductor drum, said modulated light beam traversing a path whose locus corresponds to a plurality of scanning lines on said scanning area;

a compensating means operatively connected to said print timing control pulse generator, comprising

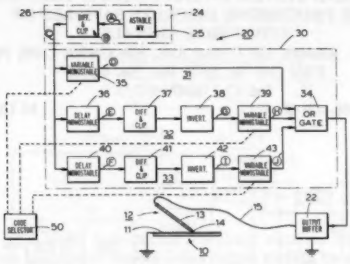
a measuring means for measuring the respective scanning times required for traversing each of said scanning lines, and

an adjusting means, operatively connected to said measuring means and said print timing control pulse generator, for adjusting the periods of said print timing control pulses produced during the traversing of each of said scanning lines in dependence upon said respective scanning times measured by said measuring means.

4,251,826
METHOD OF AND APPARATUS FOR MANUAL WRITING USING CODED PULSE TRAIN

Gerhardt T. Schwartz, London, and Allan S. Prior, Rochester, both of England, assignors to The Wiggins Teape Group Limited, Great Britain

Filed Nov. 20, 1978, Ser. No. 962,413
Claims priority, application United Kingdom, Nov. 21, 1977, 48286/77
Int. Cl.³ G03G *17/02*; G01D *15/06*
U.S. Cl. 346—163 7 Claims

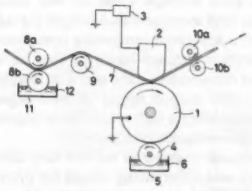


1. In a method of "writing" by using a hand-held energizable writing implement coactable with an energy-sensitive writing material, wherein a line is formed by effecting relative movement between the writing implement and the material while energizing the writing implement with a train of energy pulses whereby the line is discontinuously formed in a manner corresponding to the pulse train, the improvement characterised by: the written line being given a distinctive coding by providing said pulse train as a repeated predetermined sequence of pulses, the predetermined pulse sequence comprising pulses of differing duration and/or with differing pulse intervals.

4,251,827
WET TYPE DIRECT RECORDING METHOD

Tadashi Fujii, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Dec. 14, 1978, Ser. No. 969,687
Claims priority, application Japan, Dec. 15, 1977, 52-151135
Int. Cl.³ G03G *13/00*
U.S. Cl. 346—165 14 Claims

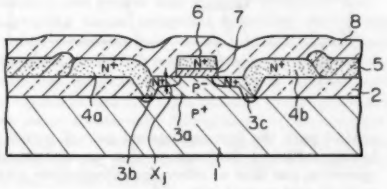


1. A wet type direct recording method comprising the steps of:
- applying an aqueous colored liquid to a counter electrode which is disposed so as to face a recording electrode with a predetermined gap therebetween,
- passing a recording material which is coated with or soaked with an oily liquid between said counter electrode and said recording electrode with the oily liquid coated or soaked side of said recording material being in contact with the surface of said counter electrode,
- applying a recording electric field corresponding to a recording image information to be recorded on said recording material to said counter electrode and said recording electrode, whereby the interfacial tensions of said oily liquid and said aqueous colored liquid on said recording electrode are changed to emulsify said two liquids electrically and a recording image of said aqueous colored liquid is formed on said recording material.

4,251,828
SEMICONDUCTOR DEVICE AND PROCESS FOR PRODUCING THE SAME

Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 5, 1978, Ser. No. 912,736
Claims priority, application Japan, Jun. 3, 1977, 52-65455
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 17 Claims



1. A semiconductor device comprising:
- a semiconductor substrate having a first conductivity type;
- a first insulating layer on said semiconductor substrate, said first insulating layer having a window on a first part of said substrate;
- an integral semiconductor layer selectively covering said first part of said substrate and said first insulating layer, a first portion of said semiconductor layer being in contact with said substrate and having a first width along a first direction, at least a second portion of said semiconductor layer within said first portion being single crystalline;
- a thin insulating layer selectively covering said second portion of said semiconductor layer above said first part of said substrate, said thin insulating layer having a thin thickness suited for establishing a channel region thereunder in said second portion of said semiconductor layer and having a first width in said first direction that is smaller than said first width of said semiconductor layer;
- a gate electrode on said thin insulating layer; and
- an insulating component located at each of two respective ends of said semiconductor layer, said two ends comprising the two sides of said semiconductor layer that are crossed by a line parallel to said first direction, said two insulating components extending perpendicularly to said first direction along the two respective sides of said channel region and being essentially thicker than said thin insulating layer.

4,251,829
INSULATED GATE FIELD-EFFECT TRANSISTOR

Fritz G. Adam, Freiburg, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Oct. 1, 1979, Ser. No. 80,871
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1978, 2844878
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23 8 Claims

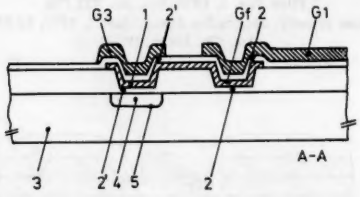
1. An insulated gate field-effect transistor having a threshold voltage adjustable within a limited range, comprising:
- a substrate;
- a source area formed in said substrate;
- a drain area formed in said substrate and spaced from said source area to define a channel region therebetween;
- a gate electrode disposed over said channel region;

an intermediate gate electrode disposed between the gate electrode and channel region;

a control part galvanically connected to the intermediate gate electrode and extending from between the channel region and gate electrode;

a first pair of partial layers of gate dielectric disposed between the intermediate gate electrode and the channel region and between the intermediate gate electrode and the gate electrode;

a second pair of partial layers of dielectric embedding the



control part, the first and second pair of partial layers having sufficient thickness so that no charges, during operation, can flow to either said intermediate gate electrode or said control part; and

an auxiliary electrode capacitively coupled to said control part, whereby the d.c. voltage potential of both said control part and said intermediate gate electrode is floating in the absence of a voltage applied to the auxiliary electrode with respect to the substrate and the threshold voltage may be adjusted by the application of a voltage to the auxiliary electrode.

4,251,830

SYSTEM FOR REMOVING VERTICAL VIBRATIONS FROM REPRODUCED VIDEO

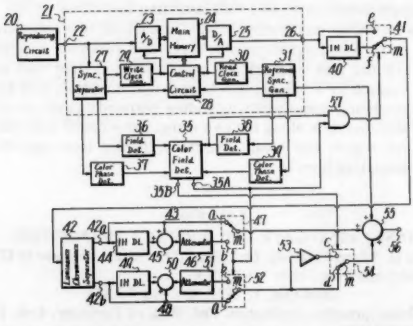
Mitsushige Tatami, Ebina, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 9, 1979, Ser. No. 28,597

Claims priority, application Japan, Apr. 7, 1978, 53-41421; May 25, 1978, 53-62700

Int. Cl.³ H04N *5/76, 5/78*

U.S. Cl. 358—8 **28 Claims**



1. A video signal processing system for processing a reproduced video signal having at least one type of television field containing television lines, said at least one type of television field being one of an odd field or an even field, comprising:

reference synchronizing signal generating means for generating a reference synchronizing signal operative to define a plurality of types of reference television fields in a predetermined repeating order;

means for detecting non-coincidence between a characteristic identifying said at least one type of reproduced television field and a characteristic identifying one of said plurality of types of reference television fields and for producing a signal in response thereto;

means for mixing reproduced video signals of an adjacent two of said television lines to produce an interpolated signal representing an average of the video signals of said adjacent two television lines; and

selective means for selectively producing output video signals containing only one of said reproduced video signal and said interpolated video signal in response to said signal from said means for detecting.

4,251,831

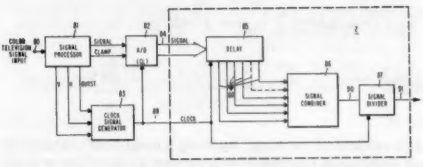
FILTER AND SYSTEM INCORPORATING THE FILTER FOR PROCESSING DISCRETE SAMPLES OF COMPOSITE SIGNALS

Bantval Y. Kamath, 129 Dolton Ave., San Carlos, Calif. 94070

Filed Oct. 26, 1979, Ser. No. 88,719

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—21 R **54 Claims**



6. A system for compensation of dropouts in a digitally encoded composite color television signal comprising a luminance component and a chrominance component, said chrominance component including a color subcarrier signal of a known frequency, the encoded color televsion signal comprising consecutive data corresponding to distinct amplitude values thereof, said distinct amplitude values being provided at a clock signal frequency equal to a rational number multiple of said subcarrier signal frequency, said rational number multiple frequency being greater than twice the frequency of the highest frequency component of the composite signal, and said clock signal being frequency and phase-locked to said subcarrier signal, comprising in combination:

a signal averaging means coupled to receive said consecutive data at said clock signal frequency, to store said data for a predetermined number of clock signal cycles, and to successively provide an average value output signal by arithmetically combining a given number of consecutive data defining a zero average value of said subcarrier signal component, said average value output signal being representative of a separated luminance component;

a signal differencing means having a first input coupled to receive said consecutive data and a second input coupled to receive said output signal of said signal averaging means for providing a difference signal representative of a separated chrominance component;

a first delay means coupled to receive said difference signal provided by said differencing means for providing a delay substantially equal to one horizontal line period of the color television signal.

a signal recombining means having a first input coupled to receive an output signal of said first delay means and a second input coupled to receive an output signal of said signal averaging means, for combining said respectively received signals into a composite color television signal;

a second delay means for providing a substantially one horizontal line delay of both said luminance and chrominance signal components of the color television signal; and

a switching means having a first input coupled to receive said color television signal and a second input coupled to receive said recombined and delayed color television signal, said switching means responsive to a control signal to selectively provide an output color television signal

from one of the signals coupled to its first and second inputs, respectively.

4,251,832

INDEX SIGNAL AMPLIFIER FOR USE IN A BEAM INDEX TELEVISION RECEIVER

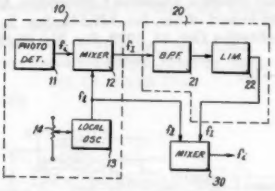
Katsuo Isono, Kawagoe, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 29, 1979, Ser. No. 88,850

Claims priority, application Japan, Oct. 30, 1978, 53-133467; Oct. 30, 1978, 53-133468; Oct. 30, 1978, 53-133469

Int. Cl.³ H04N *9/24*

U.S. Cl. 358—67 **15 Claims**



1. In a beam index color television receiver including a picture reproducer having index stripes excited by a scanning electron beam and photodetecting means for sensing light emitted by the excited index stripes to produce an index signal having an index frequency in response thereto, the combination comprising local oscillating means for generating a local oscillating signal; first mixing means coupled to said photodetecting means and to said local oscillating means for mixing said index and local oscillating signals to produce a mixed signal; band-pass amplifying means for amplifying said mixed signal; and second mixing means coupled to said band-pass amplifying means and to said local oscillating means for mixing said mixed signals with said local oscillating signal to produce an amplified index signal having said index frequency.

4,251,833

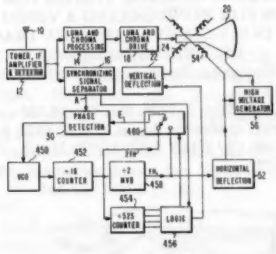
TELEVISION HORIZONTAL AFPC WITH PHASE DETECTOR DRIVEN AT TWICE THE HORIZONTAL FREQUENCY

Ronald E. Fernsler, and Donald H. Willis, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed May 9, 1979, Ser. No. 37,517

Int. Cl.³ H04N *5/04*

U.S. Cl. 358—148 **8 Claims**



1. An improved television oscillator phase control arrangement, comprising:

a source of television synchronizing signals, said synchronizing signals including first portions at the horizontal scanning frequency during recurrent first intervals and second portions at a higher frequency during recurrent second intervals;

controlled oscillator means including a first output terminal at which first oscillator signals are generated at a first frequency, and also including an oscillator rate control input terminal;

phase detection means including a first input terminal and also a second input terminal which is coupled to receive said synchronizing signals, and an output terminal coupled to said control input terminal of said controlled oscillator means;

coupling means for coupling said first input terminal of said phase detection means to said controlled oscillator means for forming an oscillator frequency and phase control loop for controlling said oscillator frequency and phase in response to said synchronizing signals;

wherein the improvement lies in that said controlled oscillator means further comprises a second output terminal for providing second oscillator signals at a second frequency related to and greater than said first frequency; and

said coupling means comprises controlled switch means coupled to said first input terminal of said phase detection means and to said first and second output terminals of said controlled oscillator means for applying said first oscillator signals to said first input terminal of said phase detection means substantially during said first intervals and for applying said second oscillator signals to said first input terminal of said phase detection means substantially during said second intervals.

4,251,834

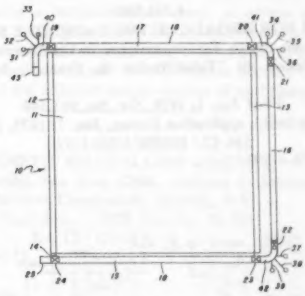
BLOCK OUTPUT CCD IMAGER

Joseph E. Hall, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 29, 1979, Ser. No. 42,749

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **16 Claims**



1. A CCD imager having an imager matrix of A columns and B rows of pixels, and clocking means providing single and multi-phase clock output pulses for application to CCD structures, at least two of the multi-phase clock output pulses being applied to the imager matrix comprising:

(a) output register means connected to receive at least two of the multi-phase clock output pulses and electrically connected to the imager matrix for receiving the charge packets representing the pixels, and having a capacity of at least N×A positions where N is an integer larger than one; and

(b) N non-destructive readout means, each electrically connected to the register means for simultaneously indicating the amplitude of the charge packets representative of N pixels.

4,251,835

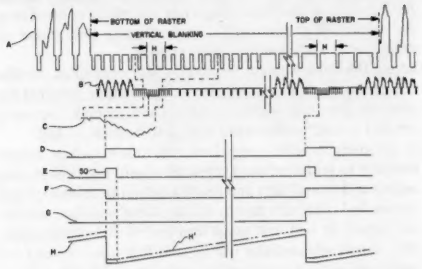
IMAGE-FORMING SYSTEM FOR OBSCURING POSTER LINES

Joern B. Eriksen, Oregon City, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Continuation-in-part of Ser. No. 854,166, Nov. 23, 1977, abandoned. This application Nov. 6, 1978, Ser. No. 958,230

Int. Cl.³ H04N *5/04, 5/76*

U.S. Cl. 358—244 **8 Claims**



7. In an improved image-forming system of the type including means for generating a refreshed raster-scan image and means for exposing a sensitized medium to successive frames of said image so as to record on said medium a copy of said image, the improvement comprising means within said image-generating means for producing a ramp signal for controlling the generation of said image in one direction, at least one of said ramp signals being produced for each said frame of said image, and means for selectively impressing a DC bias on at least one of said ramp signals so as to offset the instantaneous value of said ramp signal from a first level to a second different level and thereby cause the raster lines of said frame of said image to be successively interlaced with the raster lines of an immediately preceding frame.

4,251,836

SYSTEM FOR BROADCASTING FACSIMILE SIGNALS

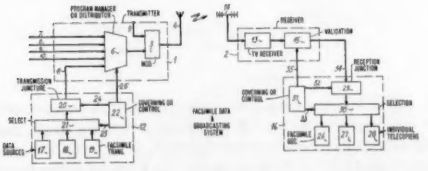
Jean Moreau, Janze, France, assignor to Etablissement Public de Diffusion dit "Telediffusion de France", Montrouge, France

Filed Jun. 1, 1978, Ser. No. 911,349

Claims priority, application France, Jun. 7, 1977, 77 18106

Int. Cl.³ H04M *1/36, 1/32*

U.S. Cl. 358—264 **7 Claims**



1. A system for the asynchronous broadcasting of facsimile data toward a plurality of telecopying reproduction means, the operational movement of a scanning head over a reproduced copy in said telecopying reproduction means being continuously synchronous, means in said telecopying reproduction means for developing a receiving time base responsive to the operation of said telecopier reproduction means, means for phase-locking system circuits in order to set into phase the coordination of said receiving time base developed responsive to operation of said telecopier reproduction means and a transmitting time base associated with said broadcast data, said system comprising a facsimile data receiver which contains a line point counter means governed by a clock signal coordinated with said receiving time base, said line point counter means being set into operation by a predetermined signal received with the facsimile data, said predetermined signal delivering the transmitting time base.

4,251,837

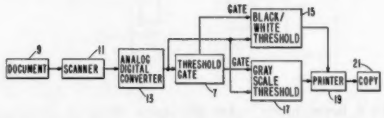
THREE DECISION THRESHOLDING MODE SWITCH AND METHOD FOR MODE SELECTION

Donald L. Janeway, III, Boulder County, Colo., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 939,542, Sep. 5, 1978. This application Oct. 16, 1979, Ser. No. 85,355

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—280 **24 Claims**



16. An electronic switching device for establishing the optimum operational mode with respect to a predetermined parameter of data from a plurality of available modes in a processing unit receiving said data in the form of a plurality of bytes indicative of a portion of said data, said device comprising:

first means for receiving a plurality of bytes representing said received data and developing therefrom an output signal indicative of differences with respect to said predetermined parameter of said data between one of said received bytes and others of said bytes of said received plurality of bytes;

second means connected with said first means and for establishing at least three ranges into which said differences sensed by said first means can fall and providing output signals indicative thereof; and

third means for receiving said output signals from said second means and responsive thereto selecting one of three decisions as established by said second means to provide mode establishing signals that enable selection of the optimum operational mode for said processing unit.

4,251,838

AUTO-TRACKING CONTROL SYSTEM FOR USE IN APPARATUS FOR REPRODUCING A VIDEO SIGNAL RECORDED IN SUCCESSIVE PARALLEL TRACKS ON A RECORDING MEDIUM

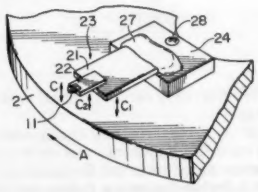
Etsuro Saito, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 16,923

Claims priority, application Japan, Mar. 3, 1978, 53-26378[U]

Int. Cl.³ G11B *5/52, 21/10, 21/18*

U.S. Cl. 360—77 **28 Claims**



1. Means for deflecting a reproducing means relative to a

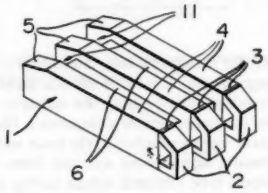
scanning path in a video tape recorder comprising: first deflectable means deformable by application thereto of a control signal and being particularly responsive to frequencies of a first range; second deflectable means also deformable by application thereto of a control signal and being particularly responsive to frequencies of a second range substantially different from said first range, and applying means for applying deflections of said first and second deflectable means to said reproducing means.

4,251,839

FLOATING HEAD DEVICE

Hiroshi Yamamoto; Shigehisa Suzuki, and Osamu Tabata, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1979, Ser. No. 10,681
Claims priority, application Japan, Feb. 21, 1978, 53-19483
Int. Cl.³ G11B 5/60
U.S. Cl. 360—103 **11 Claims**



1. A floating head device, comprising:

a head slider having a floating surface for imparting a floating force to the slider cause by air flow formed between the slider and a recording surface upon relative movement between the slider and recording surface;

at least one channel in the slider extending longitudinally thereof and defining a suction surface spaced from the recording surface a greater distance than the floating surface for imparting a sucking force between the slider and recording surface upon relative movement between the slider and recording surface; and

said slider having grooves formed therethrough at the inlet end of the suction surface, relative to the direction of air flow, thereby locating the effective inlet end of the suction surface downstream relative to the effective inlet end of the floating surface and producing resultant force moments concentrated near the center of the slider, improving that stability and reliability thereof.

4,251,840

ROTARY HEAD ASSEMBLY FOR MAGNETIC RECORDING AND REPRODUCING DEVICE

Teruo Maruyama, Neyagawa, and Takashi Ichiyanagi, Hirakata, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jan. 18, 1979, Ser. No. 4,564
Claims priority, application Japan, Jan. 27, 1978, 53-8741
Int. Cl.³ G11B 15/60
U.S. Cl. 360—107 **8 Claims**

1. A rotary head assembly for a magnetic recording and reproducing device, comprising:

a stationary center shaft having one end which is securely held in position and a free end, with a circular flange adjacent said free end;

a stationary cylinder having a cylindrical surface coaxial with said stationary center shaft;

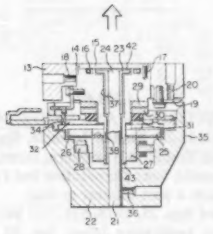
a rotary cylinder disposed adjacent to one end of said stationary cylinder for rotation about the axis of said stationary center shaft and having a cylindrical surface the diameter of which is the same as that of said cylindrical surface of said stationary cylinder, said rotary cylinder having an axial cylindrical recess therein, said recess including a shoulder portion for receiving said flange;

means for driving said rotary cylinder;

a magnetic head mounted on said rotary cylinder;

means for transporting a magnetic tape around said cylindrical surfaces of said stationary and rotary cylinders at a given speed relative thereto;

said stationary center shaft being stationary relative to said stationary cylinder, the free end of said stationary center shaft extending into said cylindrical recess for supporting said rotary cylinder, said free end having a region of engagement with the bottom of said recess which has an area substantially less than the cross sectional area of said shaft;



said rotary cylinder including a rotary sleeve having a sealed upper end defining the bottom of said recess and an open lower end;

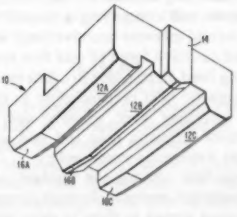
means for injecting a lubricating fluid into the space between said rotary sleeve and said stationary center shaft so as to provide a hydraulic bearing means between said stationary center shaft and rotary cylinder, said hydraulic bearing means having (i) a radial bearing portion defined by a peripheral surface part of said shaft adjacent said flange and relatively remote from said free end, and the adjacent inner surface part of said rotary sleeve, one of said surface parts having a circumferential spiral or helical groove therein for forcing said fluid toward the free end of said shaft upon rotation of said rotary sleeve; and (ii) a thrust bearing portion defined by the bottom surface of said recess and the adjacent major surface of said flange.

4,251,841

MAGNETIC HEAD SLIDER ASSEMBLY

Walter G. Jacobs, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 1, 1979, Ser. No. 44,750
Int. Cl.³ G11B 5/60, 5/22
U.S. Cl. 360—122 **2 Claims**



1. An improved low porosity magnetic head slider comprising:

a head slider formed from a composition of Al_2O_3 and TiC, said slider having an air bearing surface, and leading and trailing ends relative to motion of a data track;

at least one thin film transducer deposited at the trailing end and at the air bearing surface;

rails extending from the leading to trailing ends along the air bearing surface;

said composition having a ratio in the range of 60–80% Al_2O_3 to 40–20% TiC by weight, respectively;

wherein said composition consists of fine grain particles of aluminum oxide and titanium carbide each having an average size less than 5 microns, so as to minimize porosity problems by precluding voids, discontinuities and deformation of said thin film transducer deposited at said air bearing surface of said slider.

4,251,842

MAGNETIC RECORDING AND REPRODUCING DEVICE

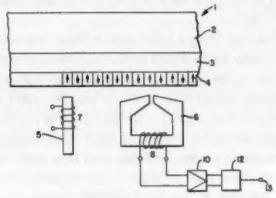
Shunichi Iwasaki, 11-35, Kunimi 1-chome, Sendai-shi, Miyagai-ken, Japan, and Yoshihisa Nakamura, Izumi, Japan, assignors to Shunichi Isasaki; Sony Corporation and Fujitsu Limited, all of Tokyo, Japan; a part interest to each

Filed Sep. 25, 1978, Ser. No. 945,295

Claims priority, application Japan, Sep. 30, 1977, 52-11745

Int. Cl.³ G11B *5/78, 5/12, 5/25*

U.S. Cl. 360—134 **13 Claims**



1. A magnetic recording and reproducing device for storing and reproducing data, comprising a magnetic recording medium, a recording head, and a reproducing head;

said magnetic recording medium, recording head, and reproducing head operatively connected to a mechanical means for causing relative motion between said magnetic recording medium and said recording and reproducing heads;

said magnetic recording medium comprising a double-layered magnetic thin film comprising a first magnetic recording layer having a first inherent coercive force and having an easy axis of magnetization perpendicular to the locus of the path of the relative motion between said magnetic recording medium and said recording and reproducing heads and comprising a second magnetic layer having a second inherent coercive force smaller than that of said first coercive force of said first recording layer;

said recording head, in response to a data input signal, generating a magnetic field perpendicular to the plane of said magnetic recording layer, whereby said recording head forms a main magnetic pole and said second magnetic layer forms a magnetic image pole;

said magnetic field altering the residual magnetization of said first magnetic recording layer in correspondence with said data input signals to thereby store said signals;

said reproducing head, in response to said residual magnetization of said first magnetic recording layer, generating a voltage in correspondence with said residual magnetization of said first magnetic recording layer, thereby reproducing an approximation of said data input signal stored in said first magnetic recording layer.

4,251,843

DISC JACKET FOR RETAINING MAGNETIC RECORDING DISC

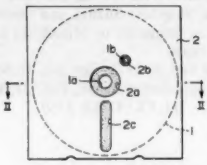
Kenichi Masuyama; Tatsuji Kitamoto, both of Odawara, and Yasuyuki Yamada, Manazuru, all of Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Continuation of Ser. No. 881,436, Feb. 27, 1978, abandoned. This application Sep. 14, 1979, Ser. No. 75,546

Claims priority, application Japan, Mar. 8, 1977, 52/25001

Int. Cl.³ G11B *23/02, 5/00*

U.S. Cl. 360—137 **3 Claims**



1. A disc jacket for a magnetic disc comprising a disc jacket and a flexible magnetic disc retained in the disc jacket, said disc jacket having openings for operating the magnetic disc from outside, wherein the improvement comprises a fibrous layer containing antistatic agents attached to the inner surface of the jacket, said antistatic agent being selected from the group consisting of anionic type antistatic agents having a composition formula of $(C_{18}H_{35}OCO.COOH.H_2NC_{18}H_{35})$, cationic type antistatic agents having a composition formula of

$$(C_{17}H_{35}CONHCH_2CH_2-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{N^+}}-CH_2CH_2OH \,.\, NO_3^-),$$

and amphoteric type antistatic agents having a composition formula of

$$(C_{12}H_{25}-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{N^+}}-CH_2COO^-).$$

4,251,844

FAULT INDICATOR CASE AND MOUNT

Hendrik Horstmann, Ratingen, Fed. Rep. of Germany, assignor to Dipl.-Ing. H. Horstmann GmbH, Heiligenhaus, Fed. Rep. of Germany

Filed Sep. 8, 1978, Ser. No. 940,497

Int. Cl.³ G01R *19/16*

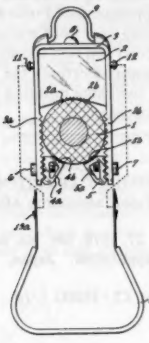
U.S. Cl. 361—1 **7 Claims**

1. A short-circuit and line fault indicator having a case which contains an electronic circuit including a reed relay to be actuated by a magnetic field surrounding a conductor, the improvement of the case comprising:

the case having a generally shallow concave front face for engagement with a cable, conductor, or the like, but for extending laterally beyond the cable or conductor when centrally in engagement therewith;

resilient holding legs extending beyond and to both sides of said face, for extension along and adjacent to opposite sides of such a cable or conductor; and

support jaws adjustably mounted on the ends of the legs, and bearing against the cable or conductor from a side generally opposite points of engagement between the face and the cable or conductor.



4,251,845

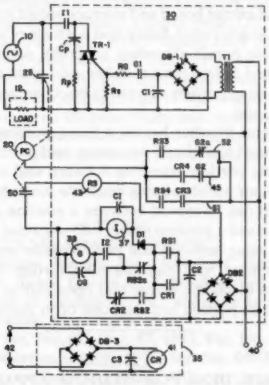
ARC SUPPRESSOR CIRCUIT

Harold E. Hancock, Cincinnati, Ohio, assignor to Power Management Corporation, Centerville, Ohio

Filed Jan. 31, 1979, Ser. No. 7,947

Int. Cl.³ H02H *7/22*

U.S. Cl. 361—8 **10 Claims**



1. In a device for suppressing arcing of the contacts of a power contactor having a coil and at least one pair of contacts closable in response to the energization of said coil, including at least one gate controlled thyristor connectable across the contacts, and means for providing gating current to said thyristor prior to, during and following the closing of said contacts, the improvement comprising

gate circuit means for providing gating current to the thyristor before the coil of said power contactor is energized,

means for thereafter energizing the coil of said power contactor to close the contacts thereof, and

means for removing gating current to said thyristor after said contacts have closed.

4,251,846

APPARATUS FOR SENSING SHORT CIRCUIT FAULTS IN ALTERNATING CURRENT SUPPLY LINES

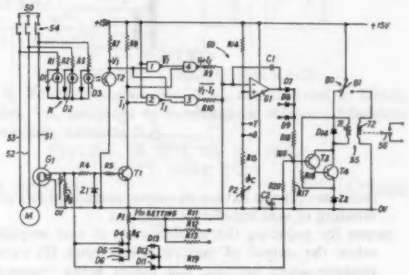
Frank K. Pearson, Buxton, and Harold Lord, Monyash, near Bakewell, both of England, assignors to National Research Development Corporation, London, England

Filed May 8, 1979, Ser. No. 37,080

Claims priority, application United Kingdom, May 12, 1978, 19304/78

Int. Cl.³ H02H *3/26*

U.S. Cl. 361—30 **16 Claims**



1. Apparatus for sensing short circuit faults in alternating current supply lines, the apparatus comprising:

means for sensing line current in an alternating current supply line and producing signals representative of the amplitude and phase of line current flowing in operation;

means for sensing a line voltage of the supply line and producing a signal representative of the phase of the said line voltage;

difference means coupled to said line current sensing means and to said voltage sensing means to receive the signals which are representative of the phases of the said current and voltage and arranged to produce in response thereto a difference output signal having a measure which varies substantially directly with difference between the said phases;

and means for comparing a relationship of the signal representative of current amplitude and the said signal produced by the difference means with a predetermined relationship of amplitude and phase difference and producing in reponse thereto a fault state output signal representative of whether or not the sensed current amplitude is larger than the corresponding amplitude as determined by the said predetermined relationship for the said difference between the said phases, said comparing means being coupled to said line current sensing means to receive said signal representative of current amplitude and to said difference means to receive said difference output signal.

4,251,847

DC CONVERTER

Ernst-Olav Pagel, Böhmfeld, and Hermann Vetter, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 839,791, Oct. 6, 1977, abandoned. This application Aug. 6, 1979, Ser. No. 63,683

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1976, 2648309

Int. Cl.³ H02H *3/20*

U.S. Cl. 361—91 **3 Claims**

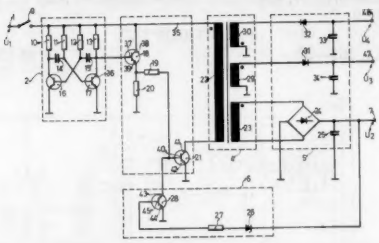
1. Apparatus for converting a first dc voltage (U_1) into a second dc voltage (U_2) comprising:

an oscillator (**2**) supplied with power by said first dc voltage for producing an electric wave output;

a transformer (**4**);

a rectifier circuit (5) connected to a secondary winding of said transformer (4);

an amplifier (3) of controllably and gradually variable amplification for providing an output corresponding to the output of said oscillator with variable amplification of the amplitude thereof, said amplifier being separate from said oscillator, having its input connected to the output of said



oscillator (2) and having its output connected to a primary winding of said transformer (4), and

means for reducing the amplification of said amplifier (3) when the output of said rectifier circuit (5) exceeds a predetermined voltage, said means being connected to said output of said rectifier circuit and to said amplifier and including a voltage threshold circuit (6) setting said predetermined voltage.

4,251,848

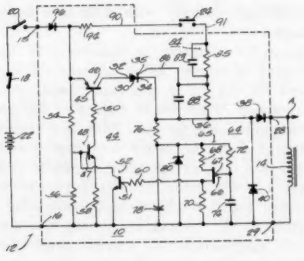
ELECTRONIC ACCELERATOR PUMP TIMING CONTROL

Peter Dogadko, Chicago, and Richard F. Jereb, Antioch, both of Ill., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed Jan. 24, 1979, Ser. No. 5,990

Int. Cl.³ H01H *47/18*

U.S. Cl. 361—196 **14 Claims**



1. An electronic timing circuit adapted to be connected to the first and second power terminals of a DC supply and for energizing a load during a predetermined timed cycle, said circuit comprising first semiconductor switching means having first, second, and third terminals, and a first-second terminal path adapted to be connected to the load to be energized, said first switching means being rendered conductive between said first and second terminals upon application of a trigger pulse to said third terminal so that current flows from the DC supply through said first switching means to energize the load and start the timed cycle, control circuit means for controlling the energizing current flow through said first-second terminal path, said control circuit means including a first transistor having an emitter-collector path connected in series relation with said first-second terminal path of said first switching means, a second transistor having a collector-emitter path connected to the base of said first transistor, and a third transistor having a collector-emitter path connected to the base of said second transistor, and timing circuit means connected in circuit with said first switching means and said control circuit means and operable a predetermined time after the start of the timed cycle for rendering said third transistor conductive to thereby render said second and first transistors nonconductive so that said first transistor interrupts the energizing current flow through said first switching means to thereby deenergize said load and end the timed cycle.

4,251,849

TRIMMER CAPACITOR

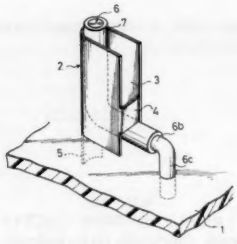
Takashi Kawai, Soma, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Sep. 27, 1978, Ser. No. 946,101

Claims priority, application Japan, Sep. 27, 1977, 52/129530[U]

Int. Cl.³ H01G *5/16*

U.S. Cl. 361—278 **8 Claims**



1. A capacitor adapted to be mounted to a printed circuit board, comprising

a conductive plate member having two spaced apart side panels adapted to extend generally perpendicularly from a printed circuit board and interconnected by a base portion extending between facing end portions of said side panels, said side panels extending generally parallel to form an open end of said plate member, said plate member having a mounting portion adapted to be connected to said circuit board; and

a conductor member having a fixing portion adapted to be connected to a circuit pattern on said circuit board and an elongate portion extending between said side panels, said conductor member being bendable whereby said elongate portion can be moved between a position along said base portion and a position nearer said open end to vary capacitance value between said plate member and said conductor member, said plate member further including a tab portion extending across said open end to divide it into a first open portion and a second open portion.

4,251,850

CONTROL DESK FOR MEDICAL APPARATUS, IN PARTICULAR FOR AN X-RAY DIAGNOSTIC APPARATUS

Wolfgang Kalbitz; Erwin Keyl; Walter Satzinger, and Hans Wichert, all of Erlangen, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 2, 1979, Ser. No. 17,031

Claims priority, application Fed. Rep. of Germany, Mar. 28, 1978, 7809246

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—331 **13 Claims**

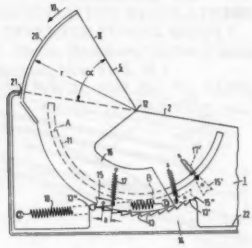
1. A control desk for medical apparatus, said control desk comprising:

an indicator panel (5),

support means having a stationary control panel (2) and having an arrangement including guide means (11) supporting said indicator panel (5) in adjacent relation to said stationary control panel (2) for pivotal movement about a horizontal axis, so that the indicator panel (5) can be pivoted from a base position (I) into at least one operating position (II) where it is substantially angularly offset relative to said base position (I),

said stationary control panel (2) having control elements (3, 4) carried thereby and operable to control said apparatus in response to operator manipulation while the operator is at an operator position proximate to said stationary control panel and while the operator has a direct view of the indicator panel (5) in the base position (I) thereof, and

indicator elements (7 through 9) on said indicator panel (5) for providing optical information concering the operation of said apparatus, which is useful while the operator is relatively remote from said stationary control panel (2),



said indicator elements (7 through 9) being pivotally movable with said indicator panel (5) relative to said stationary control panel (2) so as to be more readily viewable from an operator position remote from said stationary control panel (2) in said one operating position (II) of said indicator panel (5) as compared with the case where the indicator panel (5) remains in said base position (I), the indicator panel (5) and the stationary control panel (2) having respective marginal edges which adjoin each other along said horizontal axis, and said indicator panel (5) having means cooperating with portions of said guide means (11) for preventing the displacement of the marginal edge of the indicator panel (5) away from said stationary control panel (2), so that the indicator panel (5) is movable only in a hinge-like fashion relative to said stationary control panel (2).

4,251,851

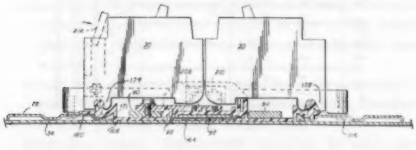
PANELBOARD ASSEMBLY

Raymond A. Diersing, Mexico, Ind.; Wilhelm T. Hackenbroch, Cedar Rapids, Iowa; George E. Schweikle, and Harris I. Stanback, both of Lexington, Ky., assignors to Square D Company, Palatine, Ill.

Division of Ser. No. 842,432, Oct. 17, 1977, Pat. No. 4,142,225. This application Sep. 18, 1978, Ser. No. 943,081

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—363 **14 Claims**



1. A panelboard comprising:

a plurality of modular insulating members of thermoplastic material each having means at one end engaging another of said members to form an insulating assembly having one planar surface adapted to engage with a planar surface of a bus bar,

and a rib wall integrally formed on each member in aligned longitudinal relationship with each other rib wall in response to the engagement of said means at one end of each member to form said insulating assembly, each rib wall extending transverse to said one planar surface and having a free end with an integrally formed longitudinally extending split bead spaced from said one planar surface and adapted to secure a circuit breaker to said assembly at any one of a plurality of positions spaced longitudinally along said bead.

4,251,852

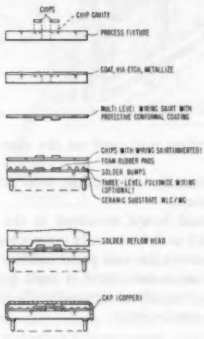
INTEGRATED CIRCUIT PACKAGE

Mario E. Ecker, Poughkeepsie, N.Y., and Leonard T. Olson, Jericho, Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 18, 1979, Ser. No. 49,824

Int. Cl.³ H05K *7/20*

U.S. Cl. 361—386 **5 Claims**



1. An improved integrated circuit chip packaging structure, said structure comprising:

an integrated circuit chip having an array of electrical contacts;

a wiring structure having an array of electrical contacts;

a thin flexible membrane-like insulating member containing a wiring pattern, said wiring pattern of said membrane-like insulating member interconnecting said array of electrical contacts of said integrated circuit chip and said array of contacts of said wiring structure;

a protective cover supported by said wiring structure and enclosing said integrated chip and said thin flexible membrane-like insulating member;

and resilient means, spaced between said wiring structure and said membrane-like member, for biasing said integrated circuit chip in physical contact with said protective cover, whereby the thermal and mechanical parameters of said packaging structure are enhanced.

4,251,853

ANNUNCIATOR OF MODULAR CONSTRUCTION

George A. Sites, West Jefferson, Ohio, assignor to Halmar Electronics, Inc., Columbus, Ohio

Filed Mar. 19, 1979, Ser. No. 21,882

Int. Cl.³ H05K *7/10*

U.S. Cl. 361—394 **14 Claims**

1. A module for a multi-module annunciator comprising,

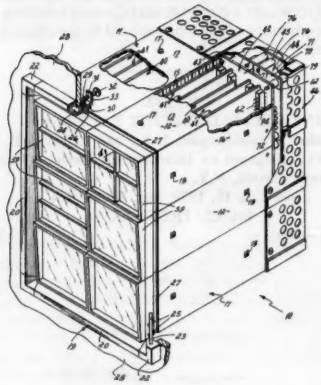
an elongated mother board mounted on the rear end of said housing and having on the front face thereof a multi-ter-

minal connector for a light card and a plurality of multi-terminal connectors for point cards,

a light card, means for slidably mounting said light card in said housing with connection to its connector, said light card having a plurality of light bulb receiving sockets,

at least one point card, and means for slidably mounting a plurality of point cards in said housing with connection to its connector,

a power supply mounted on a card having dimensions no greater than the cross-section of said housing,



means mounting said card on the rear side of said mother board,

means electrically connecting said power supply to said mother board,

and a terminal board mounted to the rear of said power supply card and electrically connected to said multi-terminal connectors for said point cards,

whereby as an annunciator is built up from modules, the total power supply is automatically sized to the size of the complete annunciator.

4,251,854

LIGHT ANGLE INDICATOR OF PHOTOGRAPHIC FLASH

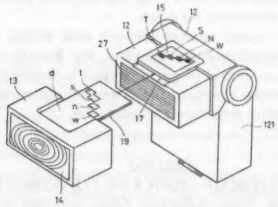
Yoshikazu Kaneko, Shijyonawate; Takashi Suzuka, and Tadahide Okuno, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka and West Electric Company, Ltd., Kadoma, both of, Japan

Filed Sep. 6, 1979, Ser. No. 73,244

Claims priority, application Japan, Sep. 13, 1978, 53/113193

Int. Cl.[3] **G03B** *15/02;* **H01J** *61/80;* **F21K** *5/00*

U.S. Cl. 362—5 **3 Claims**



1. A light angle indicator of photographic flash having a main part containing at least a flash lamp and a front lens part which is slidably coupled to said main part so as to vary distance between said lamp part and a lens of said front lens part, the improvement is that the light angle indicator comprises

a first indicator panel linked to said main part and having obliquely disposed regions and

a second indicator panel linked to said slidable front lens part and having inverse-obliquely disposed regions,

said first indicator panel and said second indicator panel being slidably and superposedly disposed with each other, thereby a region of said first indicator panel and a region of said second indicator panel which are superposed each other forming a mark which is differently noticeable from rest of regions, said mark changing responding with changes of relative position of said slidable front lens part with respect to said main part.

4,251,855

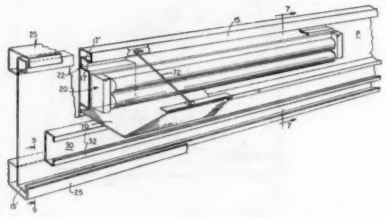
LIGHT CORNICE

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

Filed Feb. 5, 1979, Ser. No. 9,530

Int. Cl.[3] **F21S** *1/02*

U.S. Cl. 362—151 **14 Claims**



1. In a knockdown light cornice construction for illuminating a retail store wall or the like,

(a) a vertical strut adapted to be fixedly positioned adjacent said wall,

(b) a horizontal longitudinally adjustable cantilever support bracket perpendicular to said wall with the rear end thereof detachably connected to said strut and adjustable in a vertical direction only to position said bracket at a selected one of a plurality of levels,

(c) a sheet metal panel having front and rear faces and adapted to be positioned forwardly of said wall and normal to said bracket, and

(d) horizontally extending channel means on the rear face of said panel cooperative with fastening means on the forward free end of said bracket for adjustably fixing said last-mentioned end to said panel at any predetermined point horizontally of said panel.

4,251,856

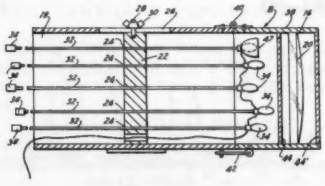
IMAGE PROJECTING DEVICE

Michael M. Logan, 96-98 Prince St., New York, N.Y. 10012

Filed May 18, 1979, Ser. No. 40,119

Int. Cl.[3] **F21V** *19/02, 21/14*

U.S. Cl. 362—232 **10 Claims**



1. A device for creating a variable light image comprising a base, an open ended tubular member, means for adjustably

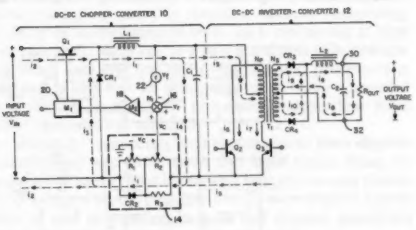
mounting said member on said base, said member comprising forward and rear sections, a lens, means for mounting said lens to the open end of said forward section, a plurality of light sources, means for energizing said light sources, a plurality of control rods extending in a direction substantially perpendicular to said lens, each having a different one of said light sources mounted on one end thereof, the other end of each of said control rods being accessible from the open end of said rear section, a disc situated within said rear section, said disc comprising means for independently adjustably mounting each of said control rods thereon for movement along said direction, and means for movably mounting said disc to said rear section.

4,251,857

LOSS COMPENSATION REGULATION FOR AN INVERTER POWER SUPPLY

Randolph D. W. Shelly, Rosemere, Quebec Canada, assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 21, 1979, Ser. No. 13,355
Int. Cl.³ H02M 3/335
U.S. Cl. 363—26 **8 Claims**



1. An inverter power supply incorporating loss compensation, comprising:

variable loading means;

transformer means having a primary winding means and a secondary winding means;

coupling means for coupling said variable loading means to said transformer means' secondary winding means;

means including chopping means for generating a primary current signal;

current sampling circuit means for sampling said primary current signal wherein said current sampling circuit means is comprised of;

serially intercoupled first and second resistor means;

serially intercoupled first diode means and third resistor means;

means coupling the open ends of said first resistor means and said first diode means to the second terminal means of said current sampling circuit means;

means coupling the open ends of said second resistor means and said third resistor means to the second terminal means of said current sampling means; and,

means coupling the intercoupled ends of said first resistor means and said second resistor means to the intercoupled ends of said first diode means and said third resistor means;

means including switching means for bidirectionally coupling said primary current signal to said transformer means' primary winding means; and,

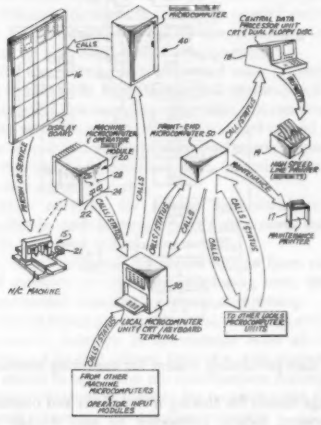
controller means responsively coupled to said current sampling circuit means varying the duty cycle of said chopping means for compensating for variations in said variable loading means.

4,251,858

PAGING, STATUS MONITORING AND REPORT COMPILING SYSTEM FOR SUPPORT, MAINTENANCE AND MANAGEMENT OF OPERATOR-SUPERVISED AUTOMATIC INDUSTRIAL MACHINES

Arthur E. Cambigue, Auburn; James M. Burton, Seattle, and Jansey D. Tieden, Puyallup, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Mar. 6, 1979, Ser. No. 18,027
Int. Cl.³ G06F 15/46, 15/16
U.S. Cl. 364—102 **13 Claims**



12. In an industrial machine support system that has a plurality of operator-actuated input modules, one at each of a corresponding plurality of operator-supervised machines, for generating digitally encoded call signals that represent requests for operator assistance, and that has a signal controlled visual paging display disposed in a plant area where operator support personnel are located, the improvement comprising:

a distributed microcomputer network interconnecting said operator-actuated input modules and said paging display, said network comprising:

a separate machine microcomputer for each of said input modules for receiving and storing said call signals;

a display microcomputer means for receiving and decoding said call signals, and including means for operating said paging display so as to cause calls represented by said call signals to be visually displayed thereon;

local microcomputer means;

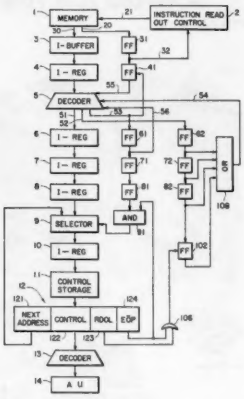
digital data linking means for linking said local microcomputer means jointly to said machine microcomputer means and to said display microcomputer means, said digital data linking means comprising at least one common current data loop extending from said local microcomputer means serially to said machine and display microcomputer means and a plurality of separate coupling means each connected in series with said loop for coupling each of said machine and display microcomputer means to said digital data linking means; and

said local microcomputer means including means for sequentially polling said machine microcomputer means for call signals held therein and means for accumulating and storing said call signals developed in response to said means for polling, and said local microcomputer means including interrupt means for transmitting call signals held in said local microcomputer means to said display microcomputer means.

4,251,859
DATA PROCESSING SYSTEM WITH AN ENHANCED PIPELINE CONTROL

Tsugio Momose; Akira Fujita, and Kanji Kubo, all of Hadano, Japan, assignors to Hitachi, Ltd., Japan

Filed Nov. 6, 1978, Ser. No. 957,688
Claims priority, application Japan, Nov. 7, 1977, 52-132514
Int. Cl.³ G06F 9/38
U.S. Cl. 364—200 **8 Claims**



1. A data processing system for executing instructions comprising:

storage means for storing instructions and operands;

processing means, connected to said storage means, for executing each instruction by carrying out a plurality of successive partial processing operations and for processing the respective operations of each instruction with relative overlap between different operations of succeeding instructions;

decode means, connected to said storage means, for detecting whether an operation code of an instruction to be executed is for a defeat overlap instruction;

control means, connected to said processing means, for prohibiting all partial processings of a succeeding instruction from being executed by said processing means, in response to the detection of a defeat overlap instruction by said decode means; and

detection means, connected to said processing means, for detecting that a predetermined number of machine cycles is further required for the complete execution of said defeat overlap instruction by detecting that said processing of said defeat overlap instruction has reached a predetermined stage;

said control means further including means for cancelling the prohibition of execution of said succeeding instruction in response to the detection by said detection means.

4,251,860
VIRTUAL ADDRESSING APPARATUS EMPLOYING SEPARATE DATA PATHS FOR SEGMENT AND OFFSET PORTIONS OF A VIRTUAL ADDRESS AND UTILIZING ONLY THE OFFSET PORTION TO CALCULATE VIRTUAL ADDRESS

Glen R. Mitchell, Pine Island; Frank G. Soltis, Rochester, and Roy L. Hoffman, Pine Island, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 23, 1978, Ser. No. 953,676
Int. Cl.³ G06F 9/32
U.S. Cl. 364—200 **13 Claims**

1. Apparatus for forming a virtual address in a data processing system having main storage and a central processing unit, where the central processing unit includes a virtual address register having a segment portion and an offset portion for storing a virtual address, said virtual address including a segment portion and an offset portion, said apparatus comprising:

a plurality of offset registers;

a plurality of segment registers;

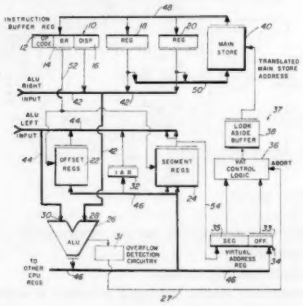
an instruction register for storing the instruction currently being executed, said instruction register storing a base register field of bits from the instruction for designating a full virtual address and a displacement field of bits from the instruction, the base register field of bits designating both one of said offset registers and one of said segment registers;

common addressing means for commonly addressing said offset registers and said segment registers, said common addressing means being connected to the base register field of bits in said instruction register, said common addressing means addressing the offset register and the segment register which are designated by said base register field of bits stored in said instruction register during the generation of a virtual address;

an arithmetic and logic unit having first and second inputs for receiving data and an output for providing the results of operations performed by said arithmetic and logic unit;

first connecting means for connecting said displacement field of bits of said instruction register to the first input of said arithmetic and logic unit;

second connecting means for connecting said offset registers



to the second input of said arithmetic and logic unit, whereby the execution of an instruction by the data processing system causes said displacement field of bits to be gated to the first input of said arithmetic and logic unit via said first connecting means, the offset stored in the offset register designated by said base register field of bits and addressed by said common addressing means to be gated to the second input of said arithmetic and logic unit via said second connecting means, and said arithmetic and logic unit to perform an arithmetic or logical operation on the displacement and offset to produce a new offset portion of a virtual address at the output of said arithmetic and logic unit;

third connecting means for connecting the output of said arithmetic and logic unit to the offset portion of said virtual address register, the new offset portion of the new virtual address being transferred from the output of said arithmetic and logic unit to the offset portion of said virtual address register via said third connecting means; and

fourth connecting means for connecting said segment registers to the segment portion of said virtual address register, the segment portion of the new virtual address being transferred from the segment register addressed by said common addressing means to the segment portion of said virtual address register via said fourth connecting means, whereby the new virtual address is formed in said virtual

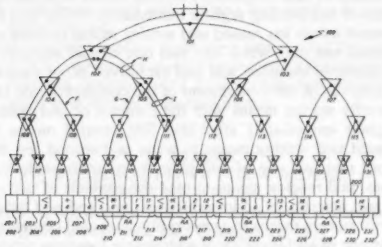
address register by concatenating the new offset portion with the segment portion stored in the segment register designated by said base register field of bits.

4,251,861

CELLULAR NETWORK OF PROCESSORS

Gyula A. Mago, Two Winmore La., Chapel Hill, N.C. 27514

Filed Oct. 27, 1978, Ser. No. 955,414
Int. Cl.³ G06F *13/00, 15/00*
U.S. Cl. 364—200 **26 Claims**



1. Information handling apparatus, for parallel evaluation of applicative expressions formed from groups of subexpressions, said groups being separated by syntactic markers, comprising:

a plurality of interconnected cells, each containing at least one processor, each cell in a first set of said cells containing more than one processor, each of said processors in said cell in said first set being adapted to being connected in a disjoint assembly of processors independent from other processors in said cell;

logic means for connecting said processors to form disjoint assemblies of said processors, said logic means being responsive to said syntactic markers to partition said plurality of interconnected cells into one or more disjoint assemblies of said processors, each of said disjoint assemblies being adapted to evaluate a subexpression;

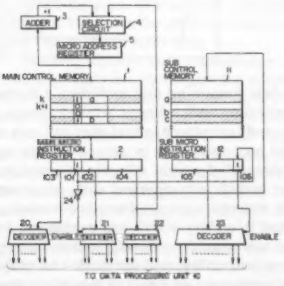
means for entering applicative expressions into said cells and for removing results from said cells after evaluation of said applicative expressions.

4,251,862

CONTROL STORE ORGANIZATION IN A MICROPROGRAMMED DATA PROCESSING SYSTEM

Masaki Murayama, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation of Ser. No. 874,063, Jan. 31, 1978, abandoned. This application Jan. 29, 1980, Ser. No. 116,567
Claims priority, application Japan, Jan. 31, 1977, 52/9374
Int. Cl.³ G06F *13/00, 9/30*
U.S. Cl. 364—200 **5 Claims**



1. A microprogram control system for assembling a sequence or variable length microinstructions to be executed by a data processing unit, said system comprising:

a main control memory having a plurality of addressable memory locations for storing microprograms, each said microprogram being constituted by a sequence of main microinstructions, each said main microinstruction comprising control data indluding an address field and a control bit, said control bit having either a first value or a second value;

means for transferring main microinstructions from said main control memory to said data processing unit for execution thereby, said main microinstruction transferring means including:

means for addressing said main microinstructions stored in said memory locations in said main control memory;

a main microinstruction register for receiving and for storing an addressed main microinstruction;

means for transmitting said addressed main microinstructions to said main microinstruction register; and

main decoders for decoding said main microinstructions having said control bits of either said first or said second value stored in said main microinstruction register and for supplying said decoded main microinstructions to said data processing unit;

a sub-control memory for storing sub-microinstructions addressable by said address field of said control data contained in said main microinstructions;

means for transferring sub-microinstructions from said sub-control memory to said data processing unit, said sub-microinstruction transferring means comprising:

means for addressing a sub-microinstruction stored in said sub-control memory in accordance with an address constituted by said address field of a main microinstruction stored in said main microinstruction register;

a sub-microinstruction register for receiving and for storing said addressed sub-microinstructions;

means for transmitting addressed sub-microinstructions from said sub-control memory to said sub-microinstruction register; and

a sub-decoder for decoding a said sub-microinstruction stored in said sub-microinstruction register responsive to a said control bit of a said main microinstruction stored in said main microinstruction register having said second value, and for supplying said decoded sub-microinstruction to said data processing unit concatenated with the said decoded main microinstruction supplied by said main decoders to said data processing unit.

4,251,863

APPARATUS FOR CORRECTION OF MEMORY ERRORS

Roland D. Rothenberger, Apple Valley, Minn., assignor to Sperry Corporation, New York, N.Y.

Filed Mar. 15, 1979, Ser. No. 8,803
Int. Cl.³ G06F *11/08;* **G11C** *29/00*
U.S. Cl. 364—200 **4 Claims**

1. In a computer having a central processing unit and having a memory coupled to said central processing unit containing a plurality of addressable locations from which said central processing unit may read, wherein each of said plurality of addressable locations has a plurality of bit positions, and having means responsively coupled to said memory and said central processing unit for detecting errors in the data read by said central processing unit from a one of said plurality of addressable locations, the improvement comprising:

means responsively coupled to said memory and said detection means for generating a first test data word and for generating a second test data word wherein said second test data word is the compliment of said first test data word;

means responsively coupled to said memory and said generating means for writing said first test data word and said

second test data word into said one of said plurality of addressable locations;

means responsively coupled to said memory for reading from said one of said plurality of addressable locations;

means responsively coupled to said reading means for temporarily storing the data as read from said one of said plurality of addressable location;

first control means responsively coupled to said detecting means, said memory, said central processing unit, said generating means, said writing means, said reading means, and said temporarily storing means for sequentially causing said temporarily storing means to temporarily store said data as read from said one of said plurality of addressable locations, said generating means to generate said first test data word, said writing means to write said first test data word into said one of said plurality of addressable locations, said reading means to read the contents of said one of said plurality of addressable locations, said generating means to generate said second test data word, said writing means to write said second test data word into said one of said plurality of addressable locations, said reading means to read the contents of said one of said plurality of addressable locations, and said temporarily storing means to temporarily store said contents of said one of said plurality of addressable locations;

a holding register responsively coupled to said temporarily storing means, said memory, and said reading means;

means responsively coupled to said temporarily storing means and said holding register for exclusive-ORing the contents of said temporarily storing means with the contents of said holding register and storing a resultant in said holding register; and

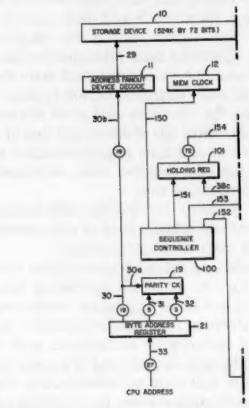
second control means responsively coupled to said first control means, said detecting means, said temporarily storing means, said exclusive-ORing means, and said holding register for sequentially causing, upon detection of said error in said data read from said one of said plurality of addressable locations, said holding register to be cleared, said exclusive-ORing means to exclusive-OR the contents of said temporarily storing means with the contents of said holding register immediately before said first control means has caused said writing means to write said second test data word into said one of said plurality of addressable locations, and said exclusive-ORing means to exclusive-OR the compliment of the contents of said temporarily storing means with the contents of said holding register immediately after said first control means has caused said writing means to write said second test data word into said one of said plurality of addressable locations, said reading means to read the contents of said one of said plurality of addressable locations, and said temporarily storing means to temporarily store said contents of said one of said plurality of addressable locations producing said corrected data word.

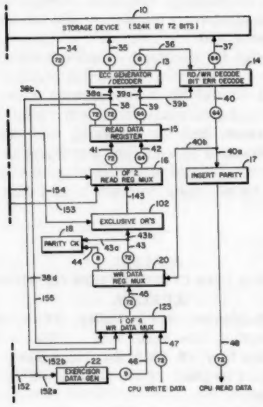
4,251,864

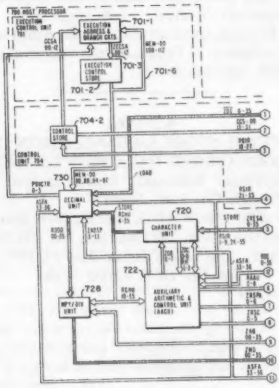
APPARATUS AND METHOD IN A DATA PROCESSING SYSTEM FOR MANIPULATION OF SIGNAL GROUPS HAVING BOUNDARIES NOT COINCIDING WITH BOUNDARIES OF SIGNAL GROUP STORAGE SPACE

Jerry L. Kindell, Glendale, and Richard T. Flynn, Peoria, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 2, 1979, Ser. No. 393
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 **6 Claims**







1. In a data processing unit including a memory unit and a central processing unit, wherein related groups of data signals called operands are stored in said memory unit and transferred in said data processing unit in groups of data signals of predetermined size called words, wherein operand boundary words which can include non-operand data constitutes portions of said words, wherein a group of words containing at least one of said operand boundary words are transferred from said memory unit to said central processing unit for manipulation determined by an instruction, said instruction identifying an address of words containing said operand boundary words and identifying non-operand data in words included in said operand boundary words, wherein an operand resulting from said at

least one manipulation is to replace said manipulated operand in a word in said memory unit, apparatus for preserving said non-operand data comprising:

first means for selecting and storing non-operand data of a first word of said word group;

second means for selecting and storing and non-operand data of a last word of said word group;

third means for temporarily storing words including said resulting operand; and

means for combining said first non-operand data in said first storage means with a first word of said resulting operand word group when said resulting first word is in said third storage means;

said combining means combining said second non-operand data in said second storage means with a last word of said resulting operand word group when said resulting last word is in said third storage means.

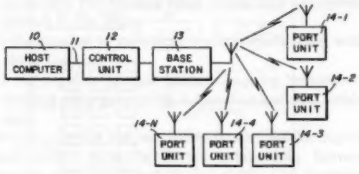
4,251,865
POLLING SYSTEM FOR A DUPLEX COMMUNICATIONS LINK

Morris A. Moore, and Robert H. Bass, both of Sunrise, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 8, 1978, Ser. No. 968,066

Int. Cl.³ G06F *3/04*; H04J *6/00*; H04Q *5/00*

U.S. Cl. 364—200 **9 Claims**



1. A method of providing more efficient use of a single communication channel of a controller/remote terminal unit link serving a multiplicity of terminal units, each unit having a permanent and unique address and comprising logic circuitry and memory, and comprising the following steps:

assigning to each said terminal unit address a permanent position in a queue of addresses stored in the memory of the controller;

the controller continuously tagging each terminal unit address in the queue as active or inactive, where "active" means that the unit is presently operating upon data or has been operating upon data within a predetermined period of time;

the controller transmitting all of the terminal unit addresses which are tagged as active units, omitting the addresses of all units tagged as inactive units, in a sequence determined by the queue of addresses;

the controller transmitting the addresses of a predetermined number of said inactive units, the choice of said units being determined by the queue of addresses;

the controller listening during said transmissions to both active and inactive units for the controller address to be received from any one terminal unit within a fixed time period following the transmission by the controller of the address of said one terminal unit, said fixed time period ending later than the beginning and earlier than the end of the next subsequent address in the transmitted sequence;

any one of the terminal units responding to said respective assigned address by transmitting the controller address followed by a data message;

the controller recognizing that reception of the controller address during said fixed time period is a response from that terminal unit having the address immediately preceding the address being transmitted at the time of controller address detection;

upon such reception, the controller interrupting the sequence of said address transmissions, storing the received predetermined message and any immediately subsequent data from the responding terminal unit;

the controller processing said predetermined message; and

the controller resuming transmission of the sequence of messages, beginning with the address which was previously interrupted.

4,251,866
CONTROL UNIT HAVING A MEMORY IN WHICH A PROGRAM CONSISTING OF COMMAND WORDS IS STORED

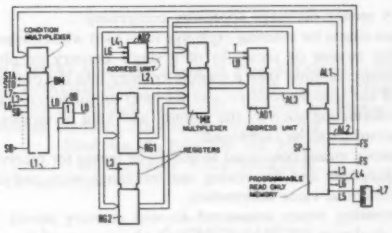
Wolfgang Mayer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 23, 1979, Ser. No. 5,825

Claims priority, application Fed. Rep. of Germany, Feb. 13, 1978, 2805939

Int. Cl.³ G06F *9/06*

U.S. Cl. 364—200 **6 Claims**



1. In a control unit of the type having a memory in which programs comprising control words are stored in correspondence with which either function signals are delivered or, depending on the presence of a predetermined condition, a transfer is executed to another command word stored in the memory, having a condition multiplexer which is connected to and addressed by the memory, the condition multiplexer having inputs for receiving condition signals and selectively operable to deliver a load signal, and having an address unit connected to the input of the memory and to the condition multiplexer for storing the actual address of a command word to be targeted in the memory and responsive to a load signal to cause the memory to output the transfer address of the next command word, the improvement therein for executing interruptions in the program sequence at any given moment comprising:

a further multiplexer including an input connected to an output of the memory for receiving transfer addresses, and an output connected to an input of the address unit;

a further address unit including an output connected to an input of said further multiplexer for delivering addresses for connecting the various other inputs of the further multiplexer through to the address unit; and

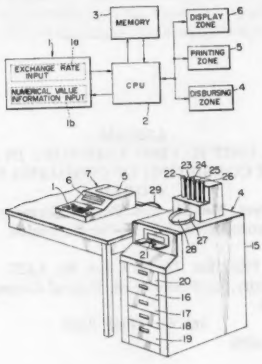
at least one address register including a first input connected to the output of the address unit for receiving and storing addresses, a second input for receiving an interrupt signal to cause such storage, and

an output connected to an input of the further multiplexer to feed the stored address to the further multiplexer after completion of the interrupt process.

4,251,867
MONEY EXCHANGER APPARATUS

Isamu Uchida; Shinya Uchida, and Kyoichi Ohsako, all of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Japan

Filed Mar. 19, 1979, Ser. No. 21,772
Claims priority, application Japan, Mar. 25, 1978, 53-34399
Int. Cl.³ G06F *15/30*
U.S. Cl. 364—408 **1 Claim**



1. A money exchange apparatus, comprising:

input means for entering exchange rates used when exchanging monies or securities of a single country or plural countries other than a specific country into the currency of the specific country, and for entering numerical value information such as the amount and kind of monies or securities to be exchanged;

memory means connected to said input means for receiving therefrom and for storing said exchange rates and said numerical value information;

computing means connected to said memory means for calculating the amount and kind of currency of the specific country from the numerical value information indicative of monies or securities of the country other than the specific country, said information being delivered by the memory means, and said computing means calculating said amount and kind of currency of the specific country also from the exchange rate stored in said memory means; and

disbursing means connected to said computing means for paying out exchange money of the specific country based on the results of computations performed by the computing means;

said apparatus further comprising changeover switch means having a first position for enabling input of said exchange rates via said input means, and a second position for input of said numerical value information via said input means, and wherein said changeover switch means is constructed so as to be movable to said first position only by use of a master key, whereby alteration of the exchange rates is precluded except by use of said master key.

4,251,868
TAKE-OFF DIRECTOR SYSTEM

Ioan Aron, and Ion Tomescu, both of Bucharest, Romania, assignors to Compania de Transport Aerian Tarom, Bucharest, Romania

Filed Sep. 15, 1978, Ser. No. 942,821
Int. Cl.³ G06F *15/50*
U.S. Cl. 364—427 **1 Claim**

1. A take-off director system for an aircraft, comprising:

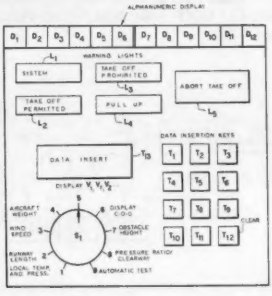
a flight director indicator on said aircraft adapted to form a display representing pitch angle and an orientation of the aircraft relative to the pitch angle;

an accelerometer mounted along the longitudinal axis of the aircraft providing a signal representing the acceleration of said aircraft;

a plurality of hydraulic-pressure/electrical transducers mounted on respective landing-gear struts of the aircraft for producing signals representing the load on said struts;

means for registering data constituting parameters of operation of the aircraft and including available engine power, aircraft weight and airport data including runway length, obstacle height and ambient temperature and pressure conditions for producing a signal representing the aircraft optimal acceleration necessary to reach a decision speed V_1 within a runway length sufficient to allow a pilot of the aircraft to stop the same within a remaining length of runway;

means for comparing the output of said accelerometers with said signal representing said optimal acceleration, for displaying same on said flight director indicator, said registering means establishing a value of a time from inception of take-off to V_1 at the optimal acceleration;



means for monitoring the actual speed of said aircraft and comparing the same at a plurality of sequential instants with calculated airspeed values over the interval represented by said time and determining the number of instances at which the comparison shows the actual speed of the aircraft to be less than the calculated values;

means responsive to said monitoring means for providing a visual and an acoustic signal instructing the pilot to abort the take-off upon detection of at least three such instances;

means for triggering said visual and acoustic signal upon the absence of a decrease in load as represented by the signals produced by said transducers by comparison with predetermined values of attainment of such decision speed V_1;

a display and input device connected with the means for registering data, said device displaying said decision speed V_1, a lift-off speed V_r and a further speed V_2 representing a condition for take-off; and

means for sequentially displaying V_1, V_r and V_2 during the start of take-off and thereafter discontinuing the display of them as the respective speeds are reached.

4,251,869
FREQUENCY-TO-BINARY CONVERTER

Robert G. Shaffer, New Britain, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

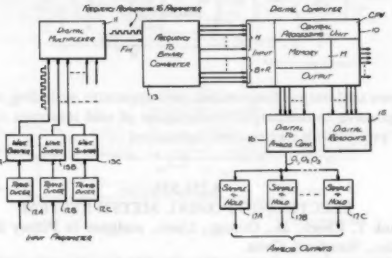
Filed May 14, 1979, Ser. No. 38,422
Int. Cl.³ G01R *23/02;* **G06F** *15/20*
U.S. Cl. 364—484 **5 Claims**

1. A converter for converting an input signal whose frequency varies as a function of a parameter being metered into a binary number for manipulation by a digital computer, said converter comprising:

A means to shape the input signal to produce a continuous train of square wave periods, each beginning with a leading edge;

B means to effect measurement during a time interval having a fixed duration which is a predetermined multiple of a given unit of time, said interval being independent of the frequency of the input signal and being unsynchronized therewith, whereby measurement takes place during that slice of the continuous train which falls between the start and finish points of the time interval;

C means during the time interval to measure the following factors:



(1) the number of time units occurring between the start point and the leading edge of the first complete wave period in the slice;

(2) the number of complete wave periods lying within the slice; and

(3) the number of time units occurring between the last leading edge appearing in the slice and the finish point; and

D means to apply the measured factors to the digital computer which from the known relationship between frequency and these factors calculates the incoming frequency.

4,251,870

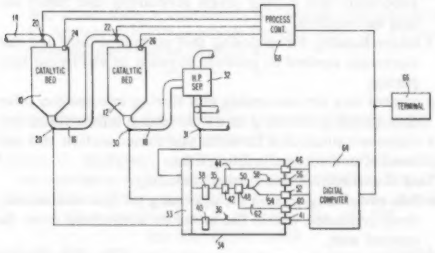
CONTROL OF GASOLINE MANUFACTURE

Stephen B. Jaffe, Cherry Hill, N.J., assignor to Mobil Oil Corporation, Fairfax, Va.

Continuation of Ser. No. 754,678, Dec. 27, 1976, abandoned, which is a continuation-in-part of Ser. No. 610,591, Sep. 5, 1975, abandoned. This application Jan. 31, 1980, Ser. No. 117,377

Int. Cl.[3] G06F *15/20*

U.S. Cl. 364—500 **3 Claims**



1. Apparatus for automatically determining the octane number of a gasoline or a gasoline component constituted by a complex mixture of individual hydrocarbon compounds boiling in the gasoline range, comprising:

means for separating a sample of said gasoline into the pure compounds present in said sample;

means for measuring the quantity of each of said pure compounds;

means responsive to the output of said measuring means for grouping said compounds into groups including at least:

(a) n-hexane,

(b) hexanes having a single carbon atom in branched chain position,

(c) hexanes having two carbon atoms in branched chain position,

(d) n-heptane,

(e) heptanes having a single carbon in branched chain position, and

(f) heptanes having two carbon atoms in branched chain position;

means for adding the individual quantities in each group to determine the quantity in said sample of all compounds in each group;

means for multiplying each of the group quantities determined in said adding step by a coefficient characteristic of octane number contribution by said group to provide values representative of octane number for the said groups; and

means for summing said last named values to derive the octane number of said sample.

4,251,871

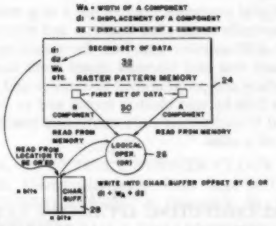
METHOD AND APPARATUS FOR STORING AND RECONSTRUCTING CHINESE-LIKE CHARACTERS

Wellington C. Yu, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 29, 1978, Ser. No. 947,079

Int. Cl.[3] G06F *3/153;* **B41J** *3/50*

U.S. Cl. 364—518 **4 Claims**



1. A machine implementable method for reconstructing Chinese-like whole characters in a designated alphabet comprising the steps of:

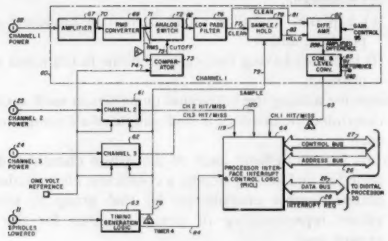
storing component parts of like size in a given dimension of the Chinese-like characters in the designated alphabet as a first set of data, together with representations of the locations of the component parts within a standard space occupied by each character as a second set of data, each component having a predetermined fixed size and shape within the standard space; and

responding to a command to reconstruct a given character from the designated alphabet in the standard space by selecting and pairwise combining the component parts of the given character from the first set of data and locating the selected component parts within the standard space in selectively displaced or superimposed relation in accordance with representations of the location of the component parts from the second set of data.

4,251,872
DRILL MONITOR SYSTEM

Dale H. Bone, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Feb. 16, 1979, Ser. No. 12,679
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—551 **14 Claims**



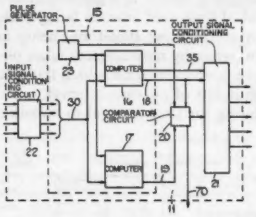
1. A motor monitor system comprising:
(a) a numerically controlled machine to accomplish a task requiring repeated mechanical loading of an electric motor;
(b) sensors responsive to changes in criteria indicative of whether mechanical loading of said electric motor has occurred and for generating a first signal;
(c) a drill monitor interface responsive to said first signals for sampling said first signals at two times just prior to and again after the theoretical occurrence of the mechanical loading, and for comparing said first signals as sampled at said two times and for generating a hit/miss signal for said electric motor and for generating an interrupt request after generation of said hit/miss signal;
(d) a means for predicting mechanical loading and informing said drill monitor interface when mechanical loading of said motor should occur for sending a second signal to said drill monitor interface informing it that mechanical loading should occur just after generation of said second signal;
(e) a digital processor controlling a stop mechanism in said numerically controlled machine and electrically linked to said drill monitor interface for receiving said interrupt request and said hit/miss signal from said drill monitor interface and programmed to analyze said hit/miss signals for a miss by said electric motor and to issue a stop command to said numerically controlled machine upon detection of a miss.

4,251,873
DIGITAL COMPUTING APPARATUS PARTICULARLY FOR CONTROLLING A GAS TURBINE ENGINE

Michael J. Joby, Solihull, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Apr. 12, 1979, Ser. No. 29,349
Claims priority, application United Kingdom, Apr. 14, 1978, 14678/78
Int. Cl.³ G06F *11/20, 15/16*
U.S. Cl. 364—741 **5 Claims**

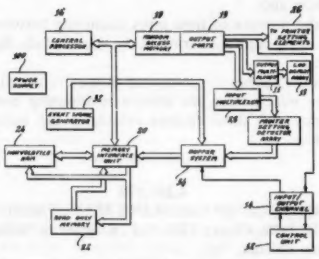
1. A digital computing apparatus comprising a first arrangement of two identical digital computing devices each of which is responsive to time control signals and each of which includes means for providing output signals in serial form, said arrangement further comprising means for supplying nominally identical input signals to said devices, means for comparing said output signals on a bit-by-bit basis and for providing a signal indicative of a lack of correspondence between said output signals, and means for supply synchronised time control signals to said devices, including a pair of oscillators for providing pulsed outputs of nominally identical frequencies, means responsive to the output pulses of one of said oscillators for generating interrupt signals, and delay means responsive to the output pulses of the other of said oscillators for resetting said interrupt signal generating means, whereby the durations of said interrupt signals are dependent on correspondence between said output frequencies, said apparatus including means responsive to unacceptable durations of said interrupt signals for providing a malfunction indication.



4,251,874
ELECTRONIC POSTAL METER SYSTEM

Frank T. Check, Jr., Orange, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 846,526, Oct. 28, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 950,302
Int. Cl.³ G06F *15/28;* G01G *23/42*
U.S. Cl. 364—900 **21 Claims**

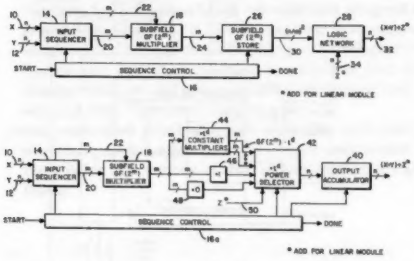


1. An electronic postal metering system including:
A meter section including
a postage printer,
an electronic control for setting said postage printer and for processing and storing postal accounting and meter setting information,
a secure housing for enclosing said postage printer and said electronic control to prevent physical or electronic tampering,
a control unit for processing and storing information other than postal accounting or meter setting information, and
a communications link between said meter section and said control unit for transmitting data,
Said electronic control further including:
a data processing section for operating on data and instructions generated within the meter or transmitted from the control unit,
a printer setting means for setting the printer to desired postage amounts in accordance with signals provided by said data processing section, and
a printer setting detector array for providing input signals to said data processing section indicative of the current settings of said printer,
Said printer setting detector array including means for verifying the operability of each input from said array to said data processing section.

4,251,875
SEQUENTIAL GALOIS MULTIPLICATION IN GF(2^n) WITH GF(2^m) GALOIS MULTIPLICATION GATES

James M. Marver, Minneapolis, and Wayne R. Olson, Prior Lake, both of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 12, 1979, Ser. No. 11,287
Int. Cl.[3] G06F *7/52, 7/38*
U.S. Cl. 364—754 11 Claims



1. A Galois GF(2^n) multiplication gate for performing the Galois multiplication in the Galois field GF(2^n) which Galois GF(2^n) multiplication gate generates the Galois product $X \cdot Y = (X \cdot Y)_0, \ldots, (X \cdot Y)_{n-1}$ from the Galois input on n, X input lines

$$X_0, \ldots, X_{n-1}$$

and from the Galois input on n, Y input lines

$$Y_0, \ldots, Y_{n-1}$$

comprising:

a single GF(2^m) Galois multiplication gate having the Galois subfield GF(2^m) where m is a positive integral divisor of n having the relationship of $k = n/m$, where k is a positive integer greater than 1, $k > 1$, which single GF(2^m) Galois multiplication gate generates k^2 subfield GF(2^m) Galois partial products;

input sequencer means receiving said X and Y n-bit inputs and sequential coupling k m-bit portions of each of said X and Y n-bit inputs to said single GF(2^m) Galois multiplication gate for enabling said single GF(2^m) Galois multiplication gate to sequentially generate said k^2 subfield GF(2^m) Galois partial products therefrom; and,

means including constant multiplier means, responsively coupled to said single GF(2^m) Galois multiplication gate and sequentially accumulating said sequentially generated k^2 subfield GF(2^m) products for providing on n output lines the n-bit Galois product X·Y.

4,251,876
EXTREMELY LOW CURRENT LOAD DEVICE FOR INTEGRATED CIRCUIT

Vernon G. McKenny, and Tsiu C. Chan, both of Carrollton, Tex., assignors to Mostek Corporation, Carrollton, Tex.

Continuation of Ser. No. 743,810, Nov. 22, 1976, abandoned.
This application Nov. 3, 1978, Ser. No. 957,587
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—182 17 Claims

17. In an integrated circuit memory having a drain supply node and a source supply node disposed on a semiconductor substrate, a binary memory cell comprising:

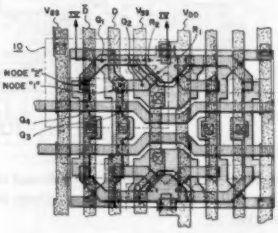
first and second insulated gate field effect transistors disposed on the substrate, each transistor having portions defining a source, a drain and a gate, the sources and drains of each transistor being formed by elongated diffused regions within the substrate, the source and drain elongated diffused regions of each transistor extending substantially parallel to each other and defining a continuous channel region in the substrate therebetween;

a layer of insulating material disposed over the channel region of each transistor;

the gate of each transistor being formed by a continuous semiconductor gate strip having a gate defining portion over-lying the insulating material over the associated channel region and a gate interconnect portion;

the source diffusion of each transistor being electrically connected to the source supply node;

the drain diffusion of the first transistor being connected to the gate portion of the second transistor thereby defining a first data node;



the drain diffusion of the second transistor being connected to the gate portion of the first transistor thereby defining a second data node; and,

the gate interconnect portions including the first and second impedance means electrically connecting the drain supply node to the corresponding data nodes, each impedance means including a body of substantially intrinsic semiconductor material having two terminal regions doped with extrinsic impurities of an opposite conductivity to the intrinsic body of series of p-n junctions for the flow of current from the drain supply node to the corresponding data node.

4,251,877
CLOCK, ESPECIALLY STRIKER CLOCK

Erich Scheer, St. Georgen-Peterzell, Fed. Rep. of Germany, assignor to KUNDO-Kieninger & Obergfell, St. Georgen, Fed. Rep. of Germany

Filed Dec. 22, 1978, Ser. No. 972,253
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1977, 2758050
Int. Cl.[3] G04C *21/06*
U.S. Cl. 368—251 12 Claims

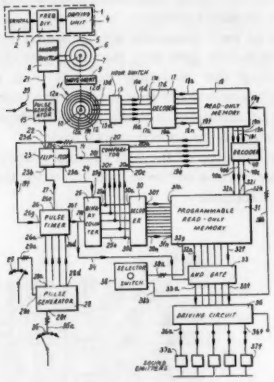
1. In a striker clock having time-indicating means driven by a clockwork and further having sound-emitting means operable at predetermined time intervals, the combination therewith of:

switch means mechanically coupled with said clockwork for producing a succession of control signals changing from one time interval to the next;

memory means for storing a multiplicity of numerical values each representing a number of strikes associated with a respective time interval occurring during a 12-hour period, said memory means being addressable by said switch means for reading out the respective numerical value during each time interval of said period;

normally inactive conversion means connected to said memory means for translating said numerical value into a

corresponding number of excitation commands for said sound-emitting means; and



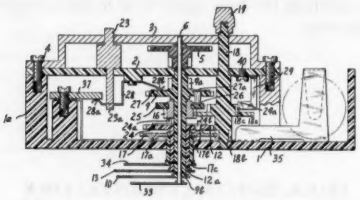
trigger means mechanically coupled with said clockwork for activating said conversion means at a given instant in each time interval.

4,251,878

SWITCHING DEVICE FOR BATTERY POWERED ALARM CLOCK

Masuo Ogihara; Kozo Chimura, and Nobuo Shinozaki, all of Shikawatashi, Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1978, Ser. No. 918,919
Claims priority, application Japan, Jun. 30, 1977, 52-86692[U]
Int. Cl.³ G04C *21/16*; H01H *43/10*
U.S. Cl. 368—257 **2 Claims**



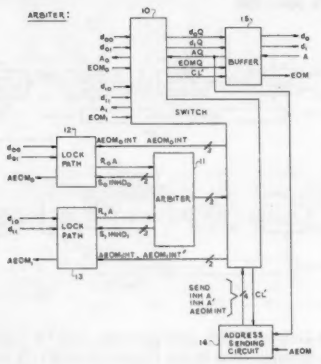
1. In a battery powered alarm clock of the type having at least one time wheel; and an alarm switching device comprising at least one detecting wheel whose phase is set in accordance with a desired alarm time, at least one detecting switch which is closed when the phase of the time wheel corresponds to that of the detecting wheel and including switch plates for said time and detecting wheels which move into electrical contact with one another upon phase correspondence of said time wheel and detecting wheel, and a printed circuit board having alarm circuitry mounted thereon and having at least one land electrically connected to the alarm circuitry, the improvement wherein said alarm switching device further comprises solderless connecting means comprising at least two battery contact plates for contacting the two poles of the battery, wherein one of the battery contact plates has three electrically conductive parts including a first part making electrical connection with one pole of the battery, a second part making electrical connection with said land of said printed circuit board, and a third part making electrical connection with one of said switch plates of said detecting switch, whereby the assembly and construction of the clock is greatly simplified.

4,251,879

SPEED INDEPENDENT ARBITER SWITCH FOR DIGITAL COMMUNICATION NETWORKS

Becky J. Clark, Tualatin, Oreg., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1979, Ser. No. 35,315
Int. Cl.³ H04J *6/00*
U.S. Cl. 370—60 **6 Claims**



3. An arbitration switch for receiving signals from two different nodes of a digital communication network and transmitting those signals to a third node, said switch comprising:

switch circuit means coupled to receive the respective data signals for each of said two nodes;

an arbitration circuit coupled to said respective nodes to receive said respective data signals and to signal said switch circuit to select the first set of the data signals to be received for subsequent transmission to said third node; and

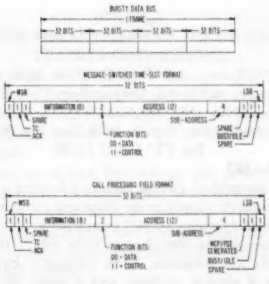
address circuit means coupled to said switch means to add an address signal to the end of the data signals to indicate which of said nodes was selected for transmission.

4,251,880

DIGITAL LOOP SWITCH FOR CONTROLLING DATA INFORMATION HAVING DIFFERING TRANSMISSION CHARACTERISTICS

Charles R. Baugh, Lincroft, and Robert M. Smith, Holmdel, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 31, 1979, Ser. No. 62,423
Int. Cl.³ H04J *6/02*
U.S. Cl. 370—80 **1 Claim**



1. A digital loop communication system arranged to interconnect data interchangers, each data interchanger arranged

to accept digital information in byte interleaved format over a single high speed channel and to place received bytes into a digital loop frame, said loop communication system comprising

a controller connected serially in said digital loop.

means for establishing with each frame first, second, and third fields, said first field having time slots for data interchange between said controller and said data interchangers, said second field having time slots assignable under control of said controller to a specific set of data interchangers for data interchange between said assigned data interchangers, said third field having time slots assignable under control of each data interchanger to a selected other one of said data interchangers for one-time data interchanger between said assigning data interchanger and said selected other data interchanger, and

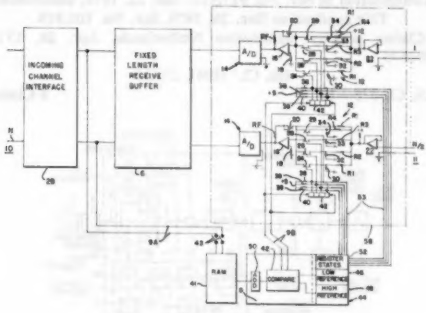
means controlled jointly by said controller and said data interchangers for apportioning between said second and third fields the number of time slots available in a given frame.

4,251,881

CENTRALIZED AUTOMATIC GAIN CONTROL CIRCUIT

Peter G. Ruether, Boulder, and Patrick A. Vachon, Arvada, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 5, 1978, Ser. No. 912,447
Int. Cl.³ H04J *5/00*
U.S. Cl. 370—98 **13 Claims**



1. In a time assigned speech interpolation communication system of the type having a plurality of transmission facilities interconnecting a near location and remote location, an automatic gain control circuit comprising:

means at said remote location for selectively generating a test signal having a predetermined amplitude, said test signal being selectively applied to each of said transmission facilities;

means at said near location for obtaining digital samples of the amplitude of the test signal received from the selected transmission facility;

central means at said near location for providing a reference signal and for comparing said digital samples of said received test signal to said reference signal; and

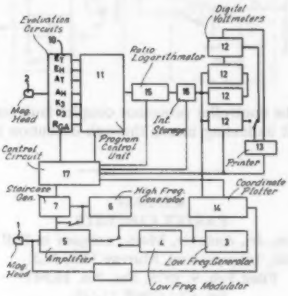
a controlled gain circuit in series with each transmission facility at said near location, said controlled gain circuit being responsive to said central means to increase or decrease the gain of said controlled gain circuit in accordance with the comparison of said digital samples of said test signal with said reference signal whereby the amplitude of said received test signal for each facility is equalized to that of each other facility.

4,251,882

METHOD AND APPARATUS FOR MEASURING THE ELECTROACOUSTIC PROPERTIES OF MAGNETIC TAPES

Dietmar Pfefferkorn, Hemsbach, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen am Rhein, Fed. Rep. of Germany

Filed Oct. 18, 1978, Ser. No. 952,613
Claims priority, application Fed. Rep. of Germany, Oct. 21, 1977, 2747333
Int. Cl.³ G01R *31/20;* **G06F** *11/00*
U.S. Cl. 371—28 **3 Claims**



1. In a method of measuring the electroacoustic properties of magnetic tapes by means of recorded test signals of varying frequency and amplitude, in which measured values of the reproduced signals which depend on the biassing current and correspond to predetermined parameters related to the magnetic tape being tested, are determined by varying for each of the relevant values of the biassing current the amplitude of the test signal to be recorded until the predetermined parameter value of the reproduced signal is attained, and by registering the measured value of the reproduced signal obtained in this way, the improvement that the recorded test signal is an amplitude-modulated signal and that by means of a test programming unit and upon the attainment of the parameter value which controls this programming unit, the relevant measured value of the reproduced signal is transmitted to an intermediate storage device for further evaluation.

4,251,883

FAULT DETECTION APPARATUS FOR A PROGRAMMABLE CONTROLLER

Valdis Grants, Lyndhurst, and Ronald E. Schultz, Willoughby, both of Ohio, assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed Apr. 16, 1979, Ser. No. 30,616
Int. Cl.³ G06F *11/00*
U.S. Cl. 371—29 **10 Claims**

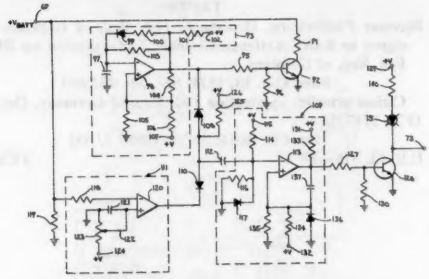
1. An improved programmable controller of the type having a controller processor, a memory with a terminal to be monitored and an I/O interface rack connected to one another through an I/O data bus, the controller processor being operable to couple input/output data between an I/O image table in the memory and the I/O interface rack through execution of an I/O routine, wherein the improvement comprises:

sensing circuit means electrically connected to the memory terminal for generating a bit of data to the controller processor in response to a fault at the memory terminal;

fault indicating means coupled to the memory through the I/O data bus, for receiving fault status bits that are output from the I/O image table during the I/O routine;

wherein the controller processor is connected to the sensing

circuit means and is operable to couple fault status bits from the sensing circuit means to the I/O image table; and



wherein the controller processor couples fault status bits to the fault indicating means through execution of the I/O routine.

4,251,884

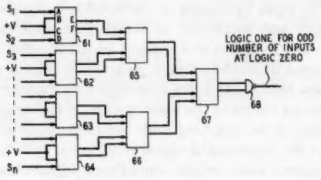
PARITY CIRCUITS

Philip J. Baun, Jr., Andover, Mass., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Feb. 9, 1979, Ser. No. 10,947

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—49 **7 Claims**



1. A parity building block circuit having two pairs of inputs, said circuit comprising means for converting the parities of the two pairs of inputs into a single pair of output signals of corresponding parity, and means for controlling the pairs of inputs so that at least one signal in each pair is of the same predetermined potential.

4,251,885

CHECKING PROGRAMMED CONTROLLER OPERATION

William C. Dodt, Broomfield, and Edward P. Lutter, Boulder, both of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 9, 1979, Ser. No. 18,976

Int. Cl.³ G06F *11/00*

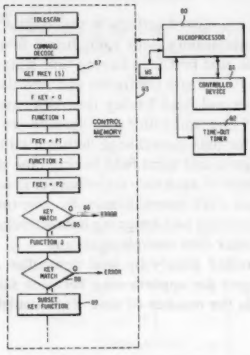
U.S. Cl. 371—60 **6 Claims**

1. The method of verifying proper execution of sequential control functions used for controlling a device, the steps of:

accessing a control program having a plurality of instruction words for enabling execution of a sequence of control steps;

storing a check key at a predetermined memory location having a predetermined address relationship to an end instruction word location of said control program to be executed,

executing said control program in a programmable controller whereby said device is operated in accordance with said control program, at predetermined points of said execution of said control program generating portions of said check key whereby at said last instruction word location generated check key is generated whenever said control program has been correctly executed, and



comparing said generated check key with said stored check key for verifying proper programmed control of said device.

4,251,886

TRANSMISSION SYSTEM FOR THE TRANSMISSION OF DATA PULSES

Engel Roza, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

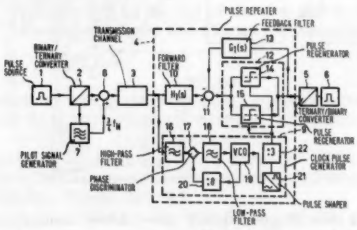
Continuation of Ser. No. 917,973, Jun. 22, 1978, abandoned.

This application Dec. 26, 1979, Ser. No. 106,819

Claims priority, application Netherlands, Apr. 28, 1978, 7804575

Int. Cl.³ H04L *25/34*

U.S. Cl. 375—18 **3 Claims**



1. A transmission system for the transmission of data pulses from a transmitter to a receiver through a transmission medium, wherein the transmitter comprises a pulse source connected to the transmission medium for applying n-valent pulses to the transmission medium, which pulses, when passing through the transmission medium give rise to the occurrence of intersymbol interference, these pulses furthermore being affected by noise, wherein the receiver comprises a pulse repeater, connected to the transmission medium, with quantized feedback, comprising a forward filter connected to the transmission medium, a difference former having a first input connected to the forward filter, a pulse regenerator connected to the output of the difference former, a clockpulse source for controlling the pulse regenerator, and a feedback filter connected between the output of the pulse regenerator and a second input of the difference former, wherein means are provided between the pulse source and the transmission medium, in the transmission medium itself and between the transmission medium and the forward filter such that a transmission

channel having a uniform transmission characteristic is provided between the pulse source and the forward filter, which transmission channel may be limited between a lower cut-off frequency differing from zero and a higher cut-off frequency differing from infinity, characterized in that the forward filter and the feedback filter are implemented as recursive filters having three or more poles which are the same for both filters in the transfer functions $H_1(s)$ and $G_1(s)$ respectively, each of which being expressed as a quotient

$$H_1(s)=N_h(s)/D_h(s)$$

$$G_1(s)=N_g(s)/D_g(s)$$

in which $D_h(s)$ is equal to $D_g(s)$ and the numerator polynomial $N_h(s)$ of the transfer function of the forward filter and the numerator polynomial $N_g(s)$ of the transfer function of the feedback filter are coupled by the group of K linear equations:

$$N_g(s_k)=N_h(s_k)\exp(s_k\tau)\ k=1, 2, \ldots K$$

wherein K exceeds two, wherein s_k represents the poles of the transfer function, K represents the number of poles and τ represents the instant of time at which the regenerated pulse is applied to the feedback filter.

DESIGN PATENTS

GRANTED FEB. 17, 1981

ERRATA

For CLASS	See PATENT NO.
D24–056	258,266
D08–382	258,280
D30–013	258,308
D16–057	258,312
D21–165	258,319

258,245

DIAPER COVER

Helen K. Brookfield, 36 Moorhouse St., Camberwell East, Victoria, 3124, Australia

Filed Sep. 21, 1977, Ser. No. 835,380

Claims priority, application Australia, Mar. 21, 1977, 71433/77

Term of patent 14 years

Int. Cl. D2—*02*

U.S. Cl. D2—10

258,246

ANKLE BAG

Walter Kravchenko, P.O. Box 5636, San Juan, P.R. 00905

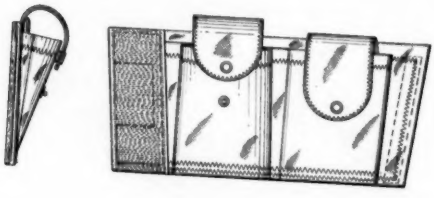
Continuation of Ser. No. 749,476, Dec. 10, 1976, abandoned.

This application Jun. 5, 1978, Ser. No. 912,241

Term of patent 14 years

Int. Cl. D2—*99*

U.S. Cl. D2—383



258,247

SIMULATIVE SPORTS SHOE

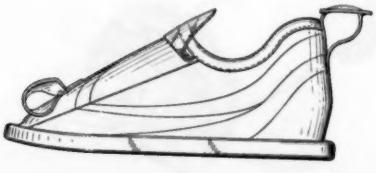
William J. Cohen, Braintree, Mass., assignor to CITC Industries Inc., New York, N.Y.

Filed Jul. 17, 1978, Ser. No. 925,620

Term of patent 14 years

Int. Cl. D2—*04*

U.S. Cl. D2—279



258,248

CARRYING POUCH FOR A SPEED SQUARE OR THE LIKE

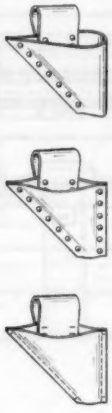
Elmer Tillman, 19600 FM 2100, Crosby, Tex. 77532

Filed Dec. 20, 1978, Ser. No. 971,367

Term of patent 14 years

Int. Cl. D02—*99*

U.S. Cl. D2—400



258,249

FLEXIBLE SHOE HORN

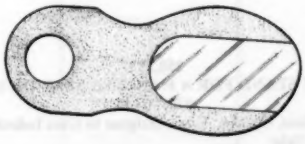
John M. Harris, P.O. Box 2819, West Palm Beach, Fla. 33402

Filed Jul. 25, 1979, Ser. No. 60,657

Term of patent 14 years

Int. Cl. D2—*07*

U.S. Cl. D2—378.2



258,250

CLOSURE STRAP FOR A CARRYING CASE

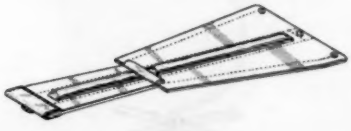
Albert Merzon, c/o Merzon Leather Co., Inc., 85 N. Third St., Brooklyn, N.Y. 11211

Filed Dec. 30, 1977, Ser. No. 866,177

Term of patent 14 years

Int. Cl. D3—*01*

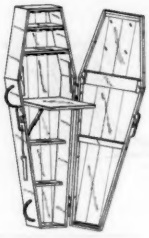
U.S. Cl. D3—54



258,251
LUGGAGE CASE
Michael Davis, New Castle, Pa., assignor to Airway Industries, Inc., Ellwood City, Pa.
Filed Jul. 5, 1979, Ser. No. 54,807
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

258,252
SUPPORT STAND FOR A HANGING SEAT OR SIMILAR ARTICLE
Philip A. Gass, Omaha, Nebr., assignor to Gass Industries, Inc., Omaha, Nebr.
Filed Apr. 7, 1972, Ser. No. 242,298
The portion of the term of this patent subsequent to Nov. 17, 1986, has been disclaimed.
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—28

258,253
LIQUOR BAR CABINET
John M. Bleakley, 28 Carol La., Spotswood, N.J. 08884
Filed May 8, 1978, Ser. No. 903,983
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



258,254
PILLOW
Catherine A. von Furstenberg, 9601 Charleville Blvd., Beverly Hills, Calif. 90212
Filed Dec. 15, 1978, Ser. No. 969,874
Term of patent 14 years
Int. Cl. D6—*09*
U.S. Cl. D6—201

258,255

WALL MOUNTED CONTAINER FOR PLANTS OR FLOWERS

Francis D. Peck, Grosse Pointe Farms, Mich., assignor to Amarantine N.V.

Filed Jan. 19, 1979, Ser. No. 4,945

Claims priority, application United Kingdom, Jul. 20, 1978, 985540/78

Term of patent 14 years

Int. Cl. D6—*06*; D11—*02*

U.S. Cl. D6—137

258,256

STORAGE UNIT

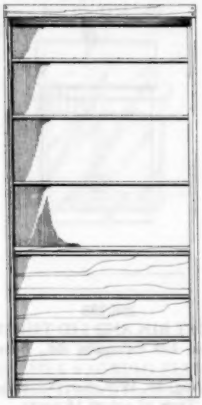
James D. Brown, 2347 English Rd., High Point, N.C. 27260

Filed Mar. 20, 1979, Ser. No. 22,149

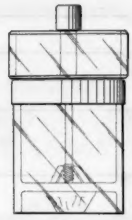
Term of patent 14 years

Int. Cl. D06—*04*

U.S. Cl. D6—170

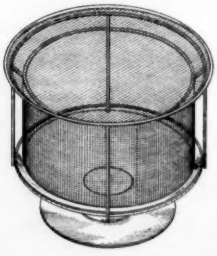


258,257
CONDIMENT MILL
William E. Bounds, 23790 Hawthorne Blvd., Torrance, Calif. 90505
Filed Jun. 5, 1978, Ser. No. 912,937
Term of patent 14 years
Int. Cl. D07—*06*
U.S. Cl. D7—53



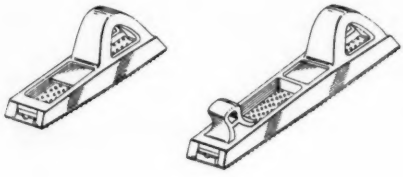
258,258
COMPOST BIN AND LID THEREFOR
Nelson R. Haddock, 428 Balcombe Rd., Beaumaris, Victoria, Australia
Filed Aug. 25, 1978, Ser. No. 936,774
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—194

258,259
PATIO FIRE PIT
Mark R. Lindholm, 11842 Bailey, Garden Grove, Calif. 92645
Filed May 17, 1979, Ser. No. 39,777
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—107



258,260
CULTIVATING IMPLEMENT
Donald Kingsley, 5716 East I St., Tacoma, Wash. 98404
Filed May 18, 1978, Ser. No. 907,257
Term of patent 14 years
Int. Cl. D8—*01*
U.S. Cl. D8—11

258,261
PLANING TOOL
Robert R. Hayes, Euclid, Ohio, assignor to Oatey Company, Euclid, Ohio
Filed Aug. 14, 1978, Ser. No. 933,735
Term of patent 14 years
Int. Cl. D08—*03*
U.S. Cl. D8—90



258,262
HANDLE FOR A DRAWER OR SIMILAR ARTICLE
Zev Sharon, 1447 Kimberly La., Lakewood, N.J. 08701
Filed Sep. 8, 1978, Ser. No. 940,861
Term of patent 14 years
Int. Cl. D8—*06*; D25—*01*
U.S. Cl. D8—314

258,263
ADJUSTABLE BRACKET FOR A VEHICLE MOUNTED ARTICLE CARRIER

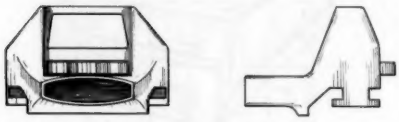
Ray G. Mareydt, Warren; Daniel J. Kowalski, Ortonville, and Douglas J. Ferguson, Davisburg, all of Mich., assignors to Four Star Corporation, Troy, Mich.

Filed May 3, 1979, Ser. No. 35,478

Term of patent 14 years

Int. Cl. D8—*08;* D12—*16*

U.S. Cl. D8—382



258,264
TIE-DOWN BRACKET FOR A VEHICLE MOUNTED ARTICLE CARRIER

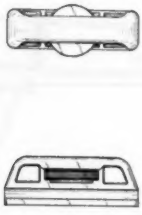
Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.

Filed Nov. 23, 1979, Ser. No. 96,636

Term of patent 14 years

Int. Cl. D8—*08;* D12—*16*

U.S. Cl. D8—382



258,265
VALVED CLOSURE FOR A CONTAINER

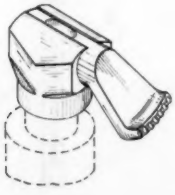
Jakob Rech, Detroit, Mich., assignor to Sheldon Applefield and Jerome Applefield, part interest to each

Filed Apr. 18, 1977, Ser. No. 788,632

Term of patent 14 years

Int. Cl. D9—*07*

U.S. Cl. D9—449



258,266
VESSEL FOR SUPPORTING LABORATORY TEST SAMPLES

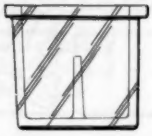
James F. Curran, Wallingford, Pa., and John E. Trafton, Woodbury, N.J., assignors to American Hospital Supply Corporation

Continuation of Ser. No. 595,731, Jul. 14, 1975, abandoned. This application May 19, 1977, Ser. No. 798,678

Term of patent 14 years

Int. Cl. D24—*02*

U.S. Cl. D24—56



258,267
LOOSE-FILL PACKING ELEMENT

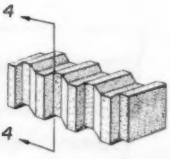
Harry D. Atkins, 5802 Troost Ave., North Hollywood, Calif. 91601

Filed Sep. 26, 1977, Ser. No. 836,515

Term of patent 14 years

Int. Cl. D9—*99*

U.S. Cl. D9—456



258,268
SHIPPING CONTAINER

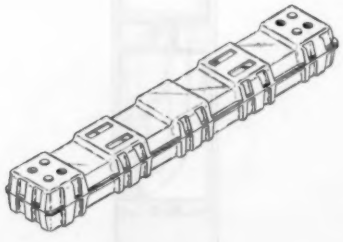
Edwin Axel, 8707 Carlisle Rd., Wyndmoor, Pa. 19118

Filed Apr. 6, 1978, Ser. No. 894,127

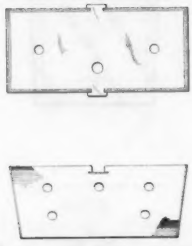
Term of patent 14 years

Int. Cl. D9—*03*

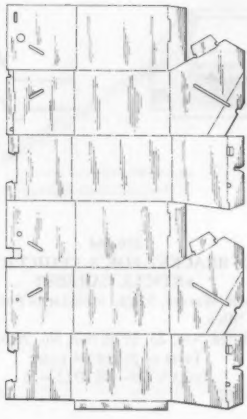
U.S. Cl. D9—426



258,269
TWO PIECE PRODUCE BOX
Richard A. Boykin, Virginia Beach, and Gordon A. Hamilton, Highland Springs, both of Va., assignors to Champion International Corporation, Stamford, Conn.
Filed Jun. 23, 1978, Ser. No. 918,696
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—431



258,271
BOX BLANK
Vernard S. Booth, Albany, Ga., and Billy W. Oswalt, Jackson, Miss., assignors to Manville Forest Products Corporation, Denver, Colo.
Filed Jul. 31, 1978, Ser. No. 930,299
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—433

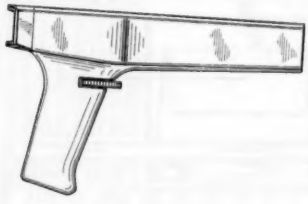


258,270
RAZOR HOLDER
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Filed Jul. 3, 1978, Ser. No. 921,995
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—342

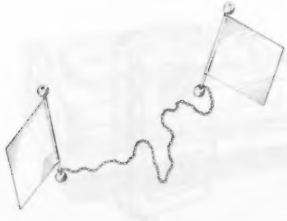
258,272
AQUARIUM THERMOMETER
Marvin A. Goldman, Great Neck; Jerome N. Goldman, New York, both of N.Y.; Silvio J. Di Marchi, Wyckoff, NJ, and Arthur Gilmore, Greenlawn, N.Y., assignors to Penn-Plax Plastics, Inc.
Filed Jun. 8, 1978, Ser. No. 913,585
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—58

258,273
SPECTROPHOTOMETER
Kenneth D. Collister, and Jerry T. Pugh, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Mar. 29, 1979, Ser. No. 24,771
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

258,274
TIMING LIGHT
Hugh T. Greenlee, Gates Mills; Roy P. Hess, Vermillion, both of Ohio, and Donald C. McKinnon, Cheboygan, Mich., assignors to Fox Valley Instrument Company, Cheboygan, Mich.
Filed Apr. 23, 1979, Ser. No. 32,671
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—112

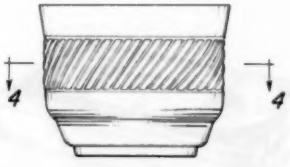


258,275
NOVELTY EYELID DECORATION
Stephen W. Ryan, 3525 E. Lake Rd., Canandaigua, N.Y. 14424
Filed May 30, 1978, Ser. No. 910,590
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—2



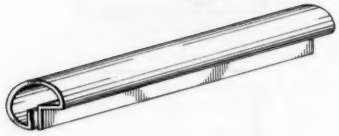
258,276
JEWELRY FINDING
Barry M. Schuler, Somerset, N.J., assignor to Silverball Enterprises, Inc.
Filed Jun. 8, 1978, Ser. No. 913,551
Term of patent 7 years
Int. Cl. D11—*01*
U.S. Cl. D11—61

258,277
BOWL
Martin J. Waterfield, Birmingham, Mich., assignor to Florists' Transworld Delivery Association
Filed Jul. 11, 1979, Ser. No. 56,448
Term of patent 7 years
Int. Cl. D11—*02*; D7—*01*
U.S. Cl. D11—153

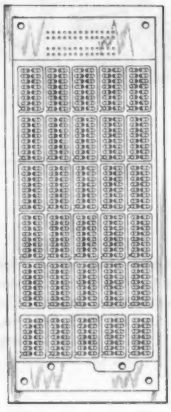


258,278
JEWELRY CLASP
Jacques Loiseau, L'Etang-la-Ville, France, assignor to Compagnie des Metaux Precieux, Paris, France
Filed Apr. 10, 1979, Ser. No. 28,913
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—87

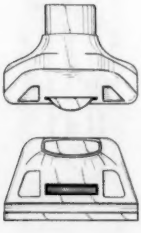
258,279
CANOE GUNWALE
Patrick B. Moore, 5105 N. Winthrop Ave., Indianapolis, Ind. 46205
Continuation-in-part of Ser. No. 707,698, Jul. 22, 1976, abandoned. This application Nov. 29, 1978, Ser. No. 964,646
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



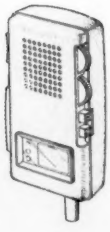
258,281
PANEL BOARD FOR INTEGRATED CIRCUIT PACKAGES
James V. Murphy, Warwick, R.I., assignor to Electronic Molding Corporation, Woonsocket, R.I.
Filed Sep. 23, 1977, Ser. No. 836,246
Term of patent 14 years
Int. Cl. D13—*03*
U.S. Cl. D13—12



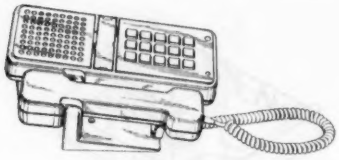
258,280
TIE-DOWN BRACKET FOR A VEHICLE MOUNTED ARTICLE CARRIER
Ray G. Mareydt, Warren, Mich., assignor to Four Star Corporation, Troy, Mich.
Filed Nov. 26, 1979, Ser. No. 97,727
Term of patent 14 years
Int. Cl. D8—*08;* D12—*16*
U.S. Cl. D8—382



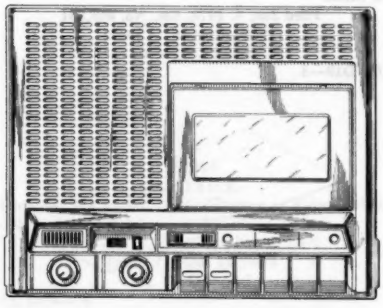
258,282
VEHICULAR WIRELESS MICROPHONE
Ryosei Koseki, Kawasaki, Japan, assignor to Nissan Motor Company, Limited
Filed Apr. 17, 1978, Ser. No. 897,297
Claims priority, application Japan, Dec. 27, 1977, 52-52044
Term of patent 7 years
Int. Cl. D14—*01*
U.S. Cl. D14—12



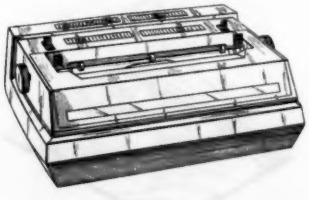
258,283
TELEPHONE SUBSCRIBER'S INSTRUMENT
John P. Stoddard, 322 Kentish Town Rd., London NW5, England
Filed May 24, 1978, Ser. No. 909,324
Claims priority, application Sweden, Nov. 24, 1977, 7700243
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53



258,284
TAPE RECORDER AND PLAYER OR SIMILAR ARTICLE
Paul J. Klucznik, Manlius, N.Y., assignor to General Electric Company
Filed Oct. 18, 1978, Ser. No. 952,570
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—6



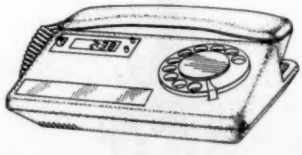
258,285
RECEIVE ONLY HIGH SPEED IMPACT PRINTER
Dayton O. Dargatz, Anaheim, Calif., assignor to Plessey Peripheral Systems, Irvine, Calif.
Filed Nov. 2, 1978, Ser. No. 957,069
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D14—50



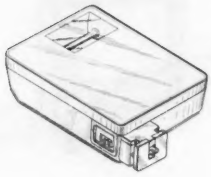
258,286
COMBINED TELEVISION RECEIVER AND VIDEO TAPE RECORDER
Yoji Ishida, 13-23 Nishitomigaoka 6-chome, Nara-shi; Minoru Hashimoto, 9-12, Namiki-cho, Ibaragi-shi, Osaka; Yoshiyuki Nomura, 13-1, Matsuoka-cho, Hirakata-shi, Osaka, and Yoshiaki Inoue, 5-103, Toda-cho, Moriguchi-shi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Mar. 2, 1979, Ser. No. 19,101
Claims priority, application Japan, Sep. 12, 1978, 53-39024
Term of patent 14 years
Int. Cl. D14—*03, 01*
U.S. Cl. D14—79

258,287
VIDEO TAPE CASSETTE
Hidehisa Hashimoto, Funabashi, and Keiichi Yoshizawa, Chiba, both of Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan
Filed Jun. 5, 1979, Ser. No. 45,835
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—11

258,288
TELEPHONE SET WITH A DIGITAL CLOCK
Chuta Aikawa, Takaidohigashi, and Keizo Minemura, Omorinishi, both of Japan, assignors to Tamura Electric Works, Ltd., Tokyo, Japan
Filed Aug. 4, 1978, Ser. No. 931,104
Claims priority, application Japan, Feb. 24, 1978, 53-6807
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—53

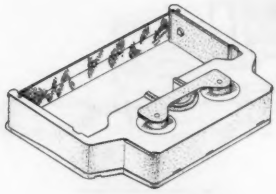


258,289
ELECTRONIC FLASH UNIT
Tsutomu Kitajima, Tokyo, Japan, assignor to Toshiba Photo Products Co., Ltd., Tokyo, Japan
Filed Oct. 13, 1978, Ser. No. 951,303
Claims priority, application Japan, Aug. 9, 1978, 53-33459
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D16—42

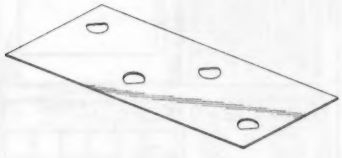


258,290
ELECTRIC GUITAR
Nobuaki Hayashi, Matsumoto, Japan, assignor to Matsumoku Kogyo Kabushiki Kaisha, Matsumoto, Japan
Filed Aug. 10, 1978, Ser. No. 932,679
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

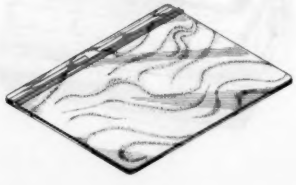
258,291
INK-RIBBON CASSETTE
Osamu Nakamura, Shiojiri, and Kaoru Iida, Suwa, both of Japan, assignors to Kabushiki Kaisha Suwa Seikosha
Filed Oct. 10, 1978, Ser. No. 949,521
Claims priority, application Japan, Apr. 11, 1978, 53-14417
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—12



258,292
DATA CARD SUPPORT AND MAILER MEMBER
Donald W. Hewitt, Roseville, and David D. Seibel, Bloomington, both of Minn., assignors to Data Card Corporation, Minneapolis, Minn.
Filed Jan. 4, 1978, Ser. No. 866,831
Term of patent 14 years
Int. Cl. D19—*01*
U.S. Cl. D19—3

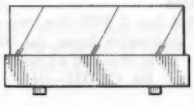


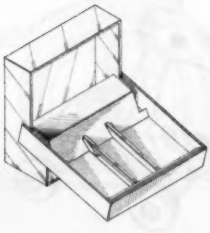
258,293
DESK PAD
William Macowski, Caldwell, N.J., assignor to Ketcham & McDougall, Inc., Roseland, N.J.
Filed May 18, 1978, Ser. No. 907,383
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—95



258,294
PAPERWEIGHT
Ted R. Simmoneau, P. O. Box 386, Florence, Oreg. 97439
Filed Jun. 5, 1978, Ser. No. 912,243
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—97

258,295
CARD FILE
Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.
Filed Jun. 7, 1978, Ser. No. 913,370
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

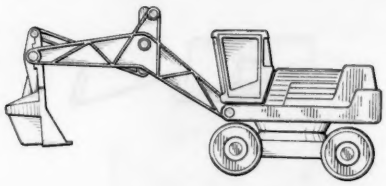




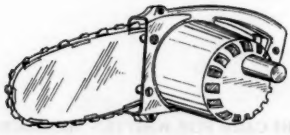
258,296
BOOKMARK FOR A PAPERBACK BOOK
Wesley M. Cowen, 2801 Somerset Dr., Lauderdale Lakes, Fla. 33311
Filed Sep. 11, 1978, Ser. No. 941,415
Term of patent 14 years
Int. Cl. D19—*99*
U.S. Cl. D19—34

258,297
MEMO CARD FOR WRITTEN MESSAGES
Benny R. Pittman, 335 W. Court St., Rutherfordton, N.C. 28139, and Joe Y. Bennett, 121 Sherman Dr., Forest City, N.C. 28043
Filed May 1, 1978, Ser. No. 901,740
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—42

258,298
TOY DIGGER
Ingmar Gustafsson, Mariehamn, Finland, assignor to Plasto KB KY, Mariehamn, Finland
Filed Mar. 23, 1978, Ser. No. 890,087
Claims priority, application Sweden, Mar. 7, 1978, 780651
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—132



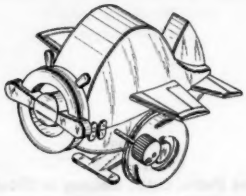
258,299
TOY CHAIN SAW
Ronald R. Klawitter, Hermann, Mo., assignor to Steven Manufacturing Company
Filed Apr. 17, 1978, Ser. No. 896,919
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—120



258,300
TOY FIRE ENGINE
Patrick T. A. Burdock, Broadstairs, England, assignor to Rovex Limited, London, England
Filed Jul. 11, 1978, Ser. No. 923,739
Claims priority, application United Kingdom, Jan. 13, 1978, 982949/78
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—133

258,301
MUSICAL TOY
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Susumu Matsumoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Aug. 25, 1978, Ser. No. 936,653
Claims priority, application Japan, May 9, 1978, 53-18689
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—63

258,302
SIMULATIVE TOY VEHICLE
Keiichi Murasaki, Tateishi, Japan, assignor to Tomy Kogyo Co., Inc., Tateishi, Japan
Filed Dec. 1, 1978, Ser. No. 965,500
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—77

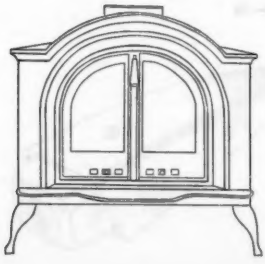


258,303
WHEELED TOY ANIMAL FIGURE
Shinroku Nakao, Yokohama; Yoshiyasu Ishii, and Yoshio Yamamoto, both of Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan
Filed Jan. 2, 1979, Ser. No. 603
Claims priority, application Japan, Jul. 31, 1978, 53-32329
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—74

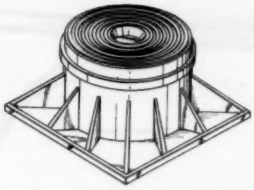
258,304
RIFLE WITH TWO BARRELS
Georges Charcornac, Saint-Etienne, France, assignor to Manufacture Francaise d'Armes et Cycles de Saint-Etienne S.A., Saint-Etienne, France
Filed Jun. 21, 1978, Ser. No. 917,679
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6

258,305
COMBINED SELF-RIGHTING SINKER AND LURE SUPPORT
Robert J. Dickinson, 501 S. Wisconsin, and James L. Wagner, 515 E. Fourth, both of Mitchell, S. Dak. 57301
Filed Jun. 6, 1979, Ser. No. 45,987
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—30

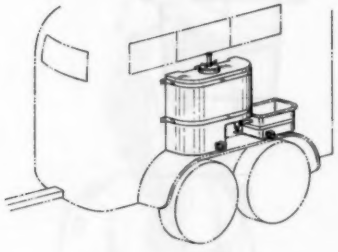
258,306
WOOD BURNING STOVE
Cyril L. Rennels, Telford, Pa., assignor to Quaker Stove Co., Inc., Lansdale, Pa.
Filed Jul. 19, 1978, Ser. No. 926,146
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



258,307
BASE SUPPORT MOUNT FOR A HEAT PUMP OR THE LIKE
Brian D. Adam, and Douglas G. Adam, both of P.O. Box 1434, Sioux City, Iowa 51102
Filed May 31, 1978, Ser. No. 911,167
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



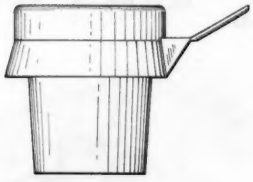
258,308
COMBINED WATER TANK AND TROUGH
Richard Weissman, 135 Clinton St., Hempstead, N.Y. 11550; Christian Haack, 221 Richard Ave., Merrick, N.Y. 11566, and Michael Fried, 227-16 Hillside Ave., Queens Village, N.Y. 11427
Filed Jul. 17, 1978, Ser. No. 924,983
Term of patent 14 years
Int. Cl. D30—*03*
U.S. Cl. D30—15



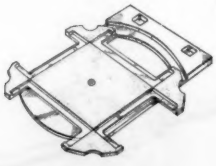
258,309
GAS FUEL BURNER FOR FIREPLACES
Joseph T. Leighton, 135 Monarch, South Laguna, Calif. 92677
Filed Aug. 14, 1978, Ser. No. 933,726
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—129

258,310
SCALPEL HANDLE
Peter G. LaHaye, Diamond Bar, Calif., assignor to Iolab Corporation, San Dimas, Calif.
Filed Oct. 19, 1978, Ser. No. 952,670
Term of patent 14 years
Int. Cl. 24—*02*; D8—*02*
U.S. Cl. D24—30

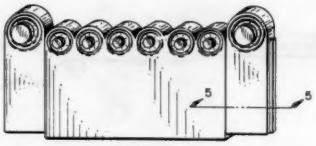
258,311
SPECIMEN COLLECTION DEVICE
James J. Peterson, Elgin, Ill., assignor to The Kendall Company, Boston, Mass.
Filed Sep. 15, 1978, Ser. No. 942,502
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54



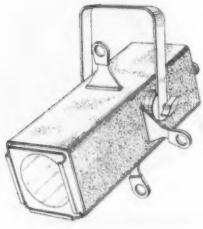
258,312
SLIDE CARROUSEL FOR USE WITH LABORATORY MICROSCOPE
James E. Parker, Fountain Valley, Calif., assignor to ICL Scientific, Fountain Valley, Calif.
Filed Oct. 25, 1978, Ser. No. 954,567
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D16—57



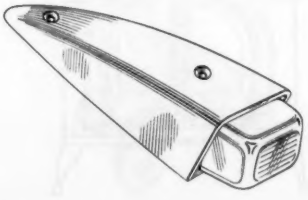
258,313
BORDER SCULPTURE FOR LAWN, GARDEN, OR THE LIKE
Eli R. Morris, Park Valley, Utah 84329
Filed Mar. 28, 1979, Ser. No. 24,671
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D25—38



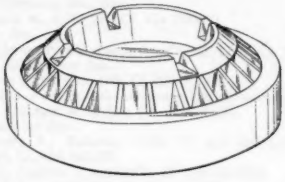
258,314
SPOTLIGHT
Gordon T. Leon, San Pedro, Calif., assignor to Berkey-Colortran, Inc., Burbank, Calif.
Filed Dec. 15, 1978, Ser. No. 969,734
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—63



258,315
TRUCK CAB CLEARANCE LIGHT
Bill R. Alsman, 2200 Christmas Tree La., Riverbank, Calif. 95367
Filed Oct. 12, 1979, Ser. No. 84,115
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—28



258,316
ASH TRAY
Ed Duin, 1141 Meadowsweet Dr., Corte Madera, Calif. 94925
Filed Aug. 27, 1979, Ser. No. 70,337
Term of patent 14 years
Int. Cl. D27—*03*
U.S. Cl. D27—27



258,317
ILLUMINATED MIRROR
Raymond E. Portyrata, North Haven, Conn., assignor to Pyramid Plastics, Inc., Meriden, Conn.
Filed Aug. 28, 1978, Ser. No. 937,082
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—67

258,318
TOOTH CLEANING IMPLEMENT, OR SIMILAR ARTICLE
Sigurd W. Bengtsson, Bruksgatan 17, 414 51 Gäteborg
Filed Oct. 16, 1978, Ser. No. 951,835
Claims priority, application Sweden, Apr. 17, 1978, 781067
Term of patent 14 years
Int. Cl. D24—*04;* D28—*08*
U.S. Cl. D28—64

258,319
TOY HORSE
Zula B. Cox, Wagon Wheel Ranch Rte. 1 - Box 5A, Folsom, La. 70437
Filed Oct. 6, 1978, Ser. No. 949,166
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—165

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF FEBRUARY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See*—
Walsh, David A., 4,251,541, Cl. 424-274.000.

Aaron, Jon D.: *See*—
Habdas, Edward P.; and Aaron, Jon D., 4,251,342, Cl. 204-195.00S.

AB Svenska Flaktfabriken: *See*—
Aurell, Sven E. F., 4,251,048, Cl. 251-30.000.

Abbey, Harold G. Fuel-air ratio automatic control system using variable venturi structure. 4,250,856, Cl. 123-439.000.

Abbott Laboratories: *See*—
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,251,516, Cl. 424-180.000.
Muetterties, Andrew J., 4,250,879, Cl. 128-214.00G.
Roteman, Robert, 4,251,532, Cl. 424-251.000.

Abe, Etsuro, to Isowa Industry Co., Ltd. Web retaining device for a corrugation machine. 4,251,313, Cl. 156-473.000.

Abe, Fumitaka: *See*—
Mikami, Tomohisa; Matsuda, Tadashi; and Abe, Fumitaka, 4,251,825, Cl. 346-160.000.

Abegunde, Adedipe: *See*—
Hanson, Robert P.; and Abegunde, Adedipe, 4,251,509, Cl. 424-89.000.

Aberg, Ulf L.: *See*—
Cederqvist, Gunnar N.; and Aberg, Ulf L., 4,251,320, Cl. 162-55.000.

Abex Corporation: *See*—
Frank, Earl E., 4,251,042, Cl. 246-443.000.

Abo, Kenji: *See*—
Kobayashi, Masakazu; Abo, Kenji; and Harashima, Koh, 4,251,558, Cl. 426-473.000.

Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and by Zubalya, Valentina I., administrator. Fuel injection internal combustion engine with prechamber torch ignition. 4,250,852, Cl. 123-260.000.

Achelpohl, Fritz; and Schneider, Horst, to Windmoller & Holscher. Method and apparatus for making bags from tubular or semi-tubular webs. 4,250,796, Cl. 493-203.000.

ACI Operations Pty. Ltd.: *See*—
Marshall, Steven, 4,250,691, Cl. 53-505.000.

Adair, Edwin L., to Medical Dynamics, Inc. Wound drainage device. 4,250,882, Cl. 128-275.000.

Adam, Fritz G., to ITT Industries, Inc. Insulated gate field-effect transistor. 4,251,829, Cl. 357-23.000.

Adam, Wilhelm: *See*—
Bleckmann, Ingo; and Adam, Wilhelm, 4,251,720, Cl. 219-541.000.

Adams, Frederick J., to Cam Gears Limited. Flow control valve. 4,250,909, Cl. 137-101.000.

Adams, Phillip: *See*—
Swift, Harold E.; Innes, Robert A.; and Adams, Phillip, 4,251,465, Cl. 564-479.000.

Adams, William R.: *See*—
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,251,378, Cl. 210-522.000.

Adkisson, William M., to Honeywell Inc. Programmed sample pyrolysis for mass spectrometer. 4,251,725, Cl. 250-281.000.

AGFA-Gevaert, A.G.: *See*—
Bauer, Walter; Krobel, Heinz; and Farber, Heinrich, 4,251,150, Cl. 354-281.000.
Bauer, Walter, 4,251,731, Cl. 250-468.000.
Cocron, Istvan; and Huber, Theodor, 4,251,145, Cl. 354-25.000.
Knor, Bernhard; Payrhammer, Bernd; and Wahl, Helmut, 4,251,157, Cl. 355-68.000.
Lermann, Peter; Wagensonner, Eduard; and Ruf, Wolfgang, 4,251,142, Cl. 354-23.00D.
Schnall, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, 4,251,155, Cl. 355-15.000.
Stemme, Otto; and Wagensonner, Eduard, 4,251,141, Cl. 354-23.00D.
Stemme, Otto; Cocron, Istvan; and Lermann, Peter, 4,251,143, Cl. 354-25.000.
Stemme, Otto; Engelsmann, Dieter; and Nicko, Reinhard, 4,251,148, Cl. 354-173.000.

Agridustrial Electronics, Inc.: *See*—
Boldt, Robert R., 4,251,759, Cl. 318-490.000.

Ahmed, Adel A. A., to RCA Corporation. Circuit with electrically controlled gain. 4,251,778, Cl. 330-279.000.

Aisan Industry Co., Ltd.: *See*—
Mitsuda, Tadao; Yasuda, Takeru; and Asai, Toshimichi, 4,250,706, Cl. 60-276.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Watanabe, Tsukasa, 4,250,924, Cl. 137-868.000.

Aitken, Donald F., Jr.: *See*—
Russell, Ronald R.; and Aitken, Donald F., Jr., 4,251,789, Cl. 335-174.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Power control system and apparatus thereof. 4,251,757, Cl. 318-83.000.

Akanuma, Youichiro: *See*—
Ariga, Kazuo; Oinuma, Norimasa; Akanuma, Youichiro; and Yoshida, Mitunari, 4,250,645, Cl. 40-545.000.

Akasu, Hiroyuki: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Akhmed ogly Talybov, Malik: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.

Akiya, Takeo: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Akzona Incorporated: *See*—
Schroeder, Arnold; and Nieuwenhuis, Paulus G. J., 4,251,640, Cl. 525-17.000.

Aladdin Industries, Incorporated: *See*—
Frazier, Albert A., 4,251,252, Cl. 65-34.000.

Albert Schulte Sohne KG: *See*—
Sachser, Herbert, 4,250,593, Cl. 16-45.000.

Alberts, Heinrich: *See*—
Mietzsch, Fritz; Rudolph, Hans; Wolfers, Heinrich; and Alberts, Heinrich, 4,251,650, Cl. 526-194.000.

Albright & Wilson Ltd.: *See*—
Rooney, Terence R., 4,251,384, Cl. 252-147.000.

Alcan Research and Development Limited: *See*—
Shessby, Peter G.; Short, Edward P.; and Gupta, Tarun K. S., 4,251,330, Cl. 204-35.00N.

Alco Standard Corporation: *See*—
Cheney, Oliver F., 4,251,809, Cl. 340-603.000.

Aldrich Paul E.; and Berezin, Gilbert H., to Du Pont de Nemours, E. I., and Company. Antihypertensive polyfluorohydroxyisopropyl bicyclic and tricyclic carbostyrils. 4,251,534, Cl. 424-258.000.

Aldrich, Paul E.; and Berezin, Gilbert H., to Du Pont de Nemours, E. I., and Company. Polyfluorohydroxyisopropyl-heterocyclic compounds. 4,251,659, Cl. 546-102.000.

Aldridge, William R.: *See*—
Walmsley, Stanley; and Aldridge, William R., 4,251,046, Cl. 248-660.000.

Alfa-Laval Separation A/S: *See*—
Hohne, Per; Kontarinis, Andreas; and Titel, Siegfried, 4,251,023, Cl. 233-1.00R.

Allen-Bradley Company: *See*—
Grants, Valdis; and Schultz, Ronald E., 4,251,883, Cl. 371-29.000.
Zaffrann, Albert A.; Borchardt, Robert E.; and Grabarczyk, Frank A., 4,251,700, Cl. 200-146.00R.

Aller, Harold E.; and Hansen, Carl O., to Rohm and Haas Company. Safened phosphorothiolate pesticidal compositions. 4,251,523, Cl. 424-225.000.

Allied Chemical Corporation: *See*—
Hamlyn, Maxwell C., 4,251,481, Cl. 264-210.300.
Li, Chien C., 4,251,382, Cl. 252-69.000.

Allied Record Company: *See*—
Pecht, Adam; and Wegner, John F., 4,251,479, Cl. 264-106.000.

Allione, Michele: *See*—
Cavallino, Francesco; Martinez, Pasquale; Vaccaneo, Stefano; and Allione, Michele, 4,250,707, Cl. 60-293.000.
Cavallino, Francesco; Martinez, Pasquale; Schiavuzzi, Roberto; and Allione, Michele, 4,250,860, Cl. 123-587.000.

Allis-Chalmers Corporation: *See*—
Heian, Glenn A., 4,251,280, Cl. 106-100.000.

Alps Electric Co., Ltd.: *See*—
Kawai, Takashi, 4,251,849, Cl. 361-278.000.

Altenburg, Hovey S., to Gala Industries, Inc. Cutter hub with replaceable knife blades for underwater pelletizer. 4,251,198, Cl. 425-67.000.

Alter, John E.; and Blumberg, Ruth, to Miles Laboratories, Inc. Extraction of citric acid. 4,251,671, Cl. 562-580.000.

Altnau, Ronald L., to Raytheon Company. Suspension system for tub assembly in clothes washing machine. 4,250,724, Cl. 68-23.200.

Aluminiumipari Tervezo es Kutato Intezet: *See*—
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,250,774, Cl. 432-15.000.
Alvarez, Luis W. Deuterium tagged articles such as explosives and method for detection thereof. 4,251,726, Cl. 250-302.000.
Alvin, Pierre. Road sweeping broom. 4,250,589, Cl. 15-193.000.
Alza Corporation: *See*—
Wong, Patrick S., 4,250,611, Cl. 29-460.000.
Amano, Takehiro; Sawada, Jiro; and Sasajima, Michitada, to Taisho Pharmaceutical Co., Ltd. 2-(p-Prenylphenyl)propionic acid. 4,251,543, Cl. 424-317.000.
AMBA Marketing Systems, Inc.: *See*—
Siegel, Milton I., 4,250,938, Cl. 150-35.000.
American Cyanamid Company: *See*—
Chamberlain, Ralph J.; and Ellwanger, Richard E., 4,251,363, Cl. 210-727.000.
Lutz, Albert W.; and Diehl, Robert E., 4,251,264, Cl. 71-105.000.
American Dental Association Health Foundation: *See*—
Bowen, Rafael L., 4,251,565, Cl. 427-2.000.
American Home Products Corporation: *See*—
Freed, Meier E.; and Diebold, James L., 4,251,444, Cl. 260-244.400.
American Hospital Supply Corporation: *See*—
Rippe, Delfin F., 4,251,514, Cl. 424-8.000.
White, Fred K., 4,250,893, Cl. 128-765.000.
White, Fred K., 4,251,159, Cl. 356-246.000.
American Stair Corporation Inc.: *See*—
Seegers, Glen A.; and Seegers, H. James, 4,250,672, Cl. 52-182.000.
Amosova, Svetlana V.: *See*—
Voronkov, Mikhail G.; Trofimov, Boris A.; Krjuchkov, Vasily V.; Amosova, Svetlana V.; Skvortsov, Jury M.; Volkov, Anatoly N.; Malkina, Anastasia G.; and Mushy, Roman Y., 4,251,666, Cl. 549-29.000.
Amper, S.A.: *See*—
Rico Gonzalez, Cesar, 4,251,697, Cl. 200-5.00A.
Andersen, John I.; and Clayton, Eugene L. Heating unit. 4,250,867, Cl. 126-121.000.
Andersson, Jan. Method for coating a rectangular cupboard door or the like with semi-rigid plastic sheeting. 4,251,307, Cl. 156-163.000.
Andersson, Nils E., to Sundpacma Aktiebolag. Apparatus for packing units of goods under continuous movement. 4,250,693, Cl. 53-543.000.
Andreev, Evgeny I.; Bykov, Mikhail A.; Zolotarev, Anatoly K.; and Sazhin, Dmitry S. Pneumatically operated switch. 4,250,929, Cl. 137-607.000.
Andreychek, Paul D., to Mine Safety Appliances Company. Safety device for side loading filtering apparatus. 4,251,246, Cl. 55-481.000.
Angel, Henry R.; and Bachenheimer, Bernard O., to Hycel, Inc. Coincidence correction of hematocrit in a hematology measurement apparatus. 4,251,768, Cl. 324-71.0CP.
Angelucci, Francesco: *See*—
Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, 4,251,513, Cl. 424-180.000.
Angevine, John S.; Frame, Scott W.; and Yacura, Stephen B., to Pullman Incorporated, Pullman Swindell Division. Particulate solid fuel combustion system. 4,250,816, Cl. 110-101.0CF.
Angood, Arthur C.; Ginger, Rodney E.; and Jarrett, Graham, to Imperial Chemical Industries Limited. Pile surfaced friction device. 4,251,580, Cl. 428-92.000.
Anheuser-Busch, Incorporated: *See*—
Robbins, Ernest A.; and Seeley, Robert D., 4,251,519, Cl. 424-180.000.
Anker, Charles A.: *See*—
VanHulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,251,551, Cl. 426-94.000.
Anthony, Wilson B. Marble pool game and equipment for playing the game. 4,251,072, Cl. 273-14.000.
Antonoplos, Patricia A.; and Heilman, William J., to Gulf Oil Corporation. End-capped polyimide oligomers. 4,251,420, Cl. 260-30.200.
Anzil, Luis: *See*—
Cook, Floyd R.; and Anzil, Luis, 4,250,588, Cl. 15-77.000.
Aoike, Kaoru: *See*—
Naka, Akihiro; Honjo, Shuichi; and Aoike, Kaoru, 4,251,229, Cl. 44-51.000.
Aotani, Shigeo, to Kato Hatsujo Company Limited. Molding holder for a windshield of a motor vehicle. 4,251,101, Cl. 296-93.000.
Aquino, Herman A.: *See*—
Stark, Marvin; Suvada, Steve L.; and Aquino, Herman A., 4,250,814, Cl. 105-251.000.
Arai, Kiyotaka: *See*—
Suhara, Manabu; and Arai, Kiyotaka, 4,251,333, Cl. 204-98.000.
Arakawa, Kouji; and Nomaguchi, Kanemasa, to Hitachi Chemical Company, Ltd. Low shrinkage polyester resin compositions. 4,251,641, Cl. 525-36.000.
Arcamone, Federico: *See*—
Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, 4,251,513, Cl. 424-180.000.
Arcidiacono, Frank R.; and Koerckel, Gerard J., to Western Electric Company, Inc. Fabricating an RC network utilizing alpha tantalum. 4,251,326, Cl. 204-15.000.
Arend, Raymond J.: *See*—
Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., 4,250,955, Cl. 165-14.000.
Ariga, Kazuo; Oinuma, Norimasa; Akanuma, Youichiro; and Yoshida, Mitunari, to Stanley Electric Co., Ltd. Indicating device with flat fluorescent lamp. 4,250,645, Cl. 40-545.000.
Armstrong, Harris W.: *See*—
Deffeyes, Robert J.; and Armstrong, Harris W., 4,251,275, Cl. 106-1.140.
Arndt, Friedrich: *See*—
Nusslein, Ludwig; and Arndt, Friedrich, 4,251,260, Cl. 71-90.000.
Aron, Ioan; and Tomescu, Ion, to Compania de Transport Aerian Tarom. Take-off director system. 4,251,868, Cl. 364-427.000.
Artisan Industries Inc.: *See*—
Baird, James L., 4,251,231, Cl. 44-56.000.
Asahi Glass Company, Ltd.: *See*—
Suhara, Manabu; and Arai, Kiyotaka, 4,251,333, Cl. 204-98.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See*—
Inoue, Akio; Kobayashi, Tadahiro; and Iwasa, Toshio, 4,251,605, Cl. 429-145.000.
Shibasaki, Ichiro; Ohmura, Kaoru; and Kimura, Takeo, 4,251,795, Cl. 338-32.00R.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See*—
Okudaira, Sadao, 4,251,132, Cl. 350-423.000.
Asai, Toshimichi: *See*—
Mitsuda, Tadao; Yasuda, Takeru; and Asai, Toshimichi, 4,250,706, Cl. 60-276.000.
Asaki, James T.: *See*—
MacKenzie, William G.; and Asaki, James T., 4,251,696, Cl. 179-103.000.
Asakura, Osamu: *See*—
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Asano, Hidejiro; Oka, Joji; Saito, Katushi; and Takasugi, Masashi, to Nippon Steel Corporation. Process for producing a highly corrosion resistant electroplated steel sheet. 4,251,329, Cl. 204-27.000.
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; and Takehata, Tetsuro, to Kobe Steel, Limited. Molding die stem with sleeve. 4,251,202, Cl. 425-461.000.
Aschiero, Roland: *See*—
Sundt, Erling; Aschiero, Roland; and Schenk, Walter, 4,251,398, Cl. 252-522.00R.
Ashland Oil, Inc.: *See*—
Frainier, Leo J.; and Fineberg, Herman, 4,251,396, Cl. 252-467.000.
Ashley, Jack E.: *See*—
Worsham, Daniel A.; Ashley, Jack E.; and Munoz, Joseph M., 4,251,772, Cl. 324-158.00P.
Askins, William E.: *See*—
Souza, Anthony J.; and Askins, William E., 4,250,654, Cl. 43-90.000.
Association pour le Transport et l'Affretement-Etablissement Walon S.A.: *See*—
Cota, Alain, 4,250,828, Cl. 114-307.000.
Asten Group, Inc.: *See*—
Fickers, Gisela, 4,250,822, Cl. 112-262.100.
Ateliers des Charmilles, S.A.: *See*—
Frei, Charles; and Pfau, Jean, 4,251,706, Cl. 219-69.00D.
Ateliers et Chantiers de Bretagne - A.C.B.: *See*—
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.
Atlantic Pipe Corporation: *See*—
Toffolon, Roger L.; and Kart, Warren E. (said Warren E. Kart assors. to), 4,251,196, Cl. 425-173.000.
Atlantic Richfield Company: *See*—
Johnson, Marvin F. L.; and Erickson, Henry, 4,251,350, Cl. 208-216.00R.
Kesling, Haven S., Jr., 4,251,667, Cl. 560-24.000.
Rausch, Maurice K.; Erickson, Henry, deceased; Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., 4,251,347, Cl. 208-57.000.
Yerkes, John W., 4,251,288, Cl. 136-247.000.
Audeh, Costandi A.; and Lovett, Richard N., to Mobil Oil Corporation. Apparatus and method for TBP-distillation of crude oil. 4,250,739, Cl. 73-17.00A.
Audi NSU Auto Union Aktiengesellschaft: *See*—
Wilmers, Gottlieb; and Wissler, Klaus, 4,250,721, Cl. 62-510.000.
Aulich, Hubert; and Eisenrith, Karl-Hein, to Siemens Aktiengesellschaft. Process and apparatus for the production of light conducting fibers. 4,251,250, Cl. 65-2.000.
Aument, Patrick E.: *See*—
Utsch, Francis V.; de la Burde, Roger Z.; and Aument, Patrick E., 4,250,898, Cl. 131-140.00P.
Aurell, Sven E. F., to AB Svenska Flaktfabriken. Pilot valve. 4,251,048, Cl. 251-30.000.
Austin, Oliver K., to Phillips Petroleum Company. Method and apparatus for fine-tuning in carbon black production. 4,251,221, Cl. 23-230.00A.
Automobiles M. Berliet: *See*—
Chomel, Roger; Martin, Gerard; and Viallon, Georges, 4,251,186, Cl. 415-210.000.
Automotive Products Limited: *See*—
Young, Alastair J., 4,251,116, Cl. 303-22.00R.
Avco Corporation: *See*—
Norris, Richard M.; and Murphy, Joseph P., 4,250,703, Cl. 60-39.09P.
Aviation Simulation Technology: *See*—
Horwitz, Joshua, 4,250,636, Cl. 434-55.000.
Axen, Udo F., to Upjohn Company, The. 2-Decarboxy-2-hydroxymethyl-6-keto-PGE$_1$ compounds. 4,251,466, Cl. 568-330.000.
B. F. Goodrich Company, The: *See*—
Ferrini, Gino P., 4,251,412, Cl. 260-29.6PT.
Oetzel, John T., 4,251,648, Cl. 525-187.000.

Son, Pyong-Nae; and Lai, John T., 4,251,435, Cl. 260-45.8NE.
Baas, Hendrik B., to B.V. Machinefabriek en IJzergieterij*. Valve. 4,251,054, Cl. 251-367.000.
Babich, Eduard A.: *See—*
Safian, Matvei M.; Babich, Eduard A.; Dolzhenkov, Boris S.; and Esaulenko, Valery D., 4,250,726, Cl. 72-38.000.
Bachenheimer, Bernard O.: *See—*
Angel, Henry R.; and Bachenheimer, Bernard O., 4,251,768, Cl. 324-71.0CP.
Badino, Charles L., to Joy Manufacturing Company. Filter. 4,251,376, Cl. 210-331.000.
Baird, James L., to Artisan Industries Inc. Direct process for the production of gasohol from fermentation mixtures. 4,251,231, Cl. 44-56.000.
Baird, William C., Jr.: *See—*
Mauldin, Charles H.; and Baird, William C., Jr., 4,251,391, Cl. 252-439.000.
Mauldin, Charles H.; and Baird, William C., Jr., 4,251,392, Cl. 252-439.000.
Baisden, C. Robert. Edible food container and mold for forming same. 4,251,554, Cl. 426-128.000.
Bakker, Eppe; and Riemersma, Pieter, to U.S. Philips Corporation. Shaving apparatus. 4,250,617, Cl. 30-34.200.
Balducci, Luigi; and Rustioni, Massimo, to Montedison S.p.A. Bismuth vanadate pigments and process for preparing same. 4,251,283, Cl. 106-296.000.
Baldwin, John J.; and Ponticello, Gerald S., to Merck & Co., Inc. Thiosubstituted pyridines. 4,251,663, Cl. 546-303.000.
Baliga, Bantval J.; and Gidley, Gerald B., to General Electric Company. Planar epitaxial refill using liquid phase epitaxy. 4,251,299, Cl. 148-171.000.
Ball, George A., Jr., to GTE Products Corporation. Thermistor bonded to thermally conductive plate. 4,251,792, Cl. 338-22.00R.
Balzer, David J.; and Sickinger, James D., to Caterpillar Tractor Co. Shaft puller. 4,250,766, Cl. 74-405.000.
Balzer, Norbert R., to Park-Ohio Industries, Inc. Inductor for hardening gear teeth. 4,251,705, Cl. 219-10.590.
Bamba, Fumio: *See—*
Shibata, Shoson; Sato, Akio; Hayakawa, Yoshihiro; and Bamba, Fumio, 4,250,939, Cl. 152-362.00R.
Baraff, David R.: *See—*
Miner, Carla J.; Baraff, David R.; Serinken, Nur M.; Streater, Richard W.; and Drobny, Vladimir F., 4,251,136, Cl. 350-334.000.
Barczy, Zsolt: *See—*
Dolhay, Balazs; and Barczy, Zsolt, 4,250,892, Cl. 128-758.000.
Bargeron, Kim G.; Hormel, Thad S.; Winegardner, David K.; and Lovelace, Bruce G., to Dow Chemical Company, The. Preparation of N-(2-mercaptoethyl)alkanamides. 4,251,459, Cl. 564-215.000.
Baril, Jacques; Gaborieau, Jean-Yves; and Lheureux, Philippe, to SCAL Societe de Conditionnements en Aluminium. Process for the production of thermoformed articles comprised of aluminum-based and magnesium-based alloys. 4,250,727, Cl. 72-46.000.
Barkan, Edward: *See—*
Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, 4,251,798, Cl. 340-146.3SY.
Barker, Alfred W. Mobility aid. 4,251,105, Cl. 297-6.000.
Barlow, Carl S. Protective knee support. 4,250,578, Cl. 2-24.000.
Barlow, Gordon A.; Krutsch, John R.; and Zidman, Michael J., to Gordon Barlow Design. Figurine pump toy. 4,250,656, Cl. 46-44.000.
Barlow, Gordon A.; and Janiszewski, Anthony, to Gordon Barlow Design. Air city game. 4,250,657, Cl. 46-44.000.
Barnett, Allan E.: *See—*
Carter, James L.; and Barnett, Allan E., 4,251,394, Cl. 252-452.000.
Carter, James L.; and Barnett, Allan E., 4,251,672, Cl. 568-814.000.
Barnett, Allen M., to University of Delaware, The. Thin film photovoltaic cells having blocking layers. 4,251,286, Cl. 136-260.000.
Barnett, Harry. Box closing machine. 4,250,683, Cl. 53-138.00R.
Barone, Bruno J., to Denka Chemical Corporation. Partial oxidation catalyst. 4,251,390, Cl. 252-435.000.
Bartell, Patrick E.: *See—*
Luetzelschwab, Roland C.; and Bartell, Patrick E., 4,251,784, Cl. 333-127.000.
Barthe, Henry P.: *See—*
Cobb, William R.; and Barthe, Henry P., 4,250,975, Cl. 180-89.130.
Barthruff, Otto; Mayer, Martin; and Sprenger, Martin, to Robert Bosch GmbH. Electromagnetic solenoid operated switch, particularly starter switch for automotive engines. 4,251,788, Cl. 335-157.000.
Bartin Limited: *See—*
Tinsley, William W., 4,250,734, Cl. 72-422.000.
Bartmann, Wilhelm: *See—*
Beck, Gerhard; Bartmann, Wilhelm; Lerch, Ulrich; and Schokens, Bernward, 4,251,669, Cl. 560-121.000.
Bartz, Kenneth W., to Exxon Research and Engineering Co. Use of chemically modified polyolefins for bonding nails together in a configuration suitable for use in a power driven nailer. 4,250,996, Cl. 206-343.000.
BASF Aktiengesellschaft: *See—*
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,251,653, Cl. 528-335.000.
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.
Jarre, Wolfgang; Stutz, Herbert; and Schoen, Ernst, 4,251,639, Cl. 521-159.000.
Pfefferkorn, Dietmar, 4,251,882, Cl. 371-28.000.
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.
BASF Wyandotte Corporation: *See—*
Login, Robert B.; and Dutton, Daniel R., 4,251,402, Cl. 260-9.000.
Bass, Robert H.: *See—*
Moore, Morris A.; and Bass, Robert H., 4,251,865, Cl. 364-200.000.
Bastian Blessing Co. Inc.: *See—*
Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., 4,250,955, Cl. 165-14.000.
Bathum, Roy N., Jr.: *See—*
Suzuki, Noritoshi; Tsubokawa, Masakatsu; Bathum, Roy N., Jr.; and Selset, Ron S., 4,251,060, Cl. 254-356.000.
Baud, Alain: *See—*
Rivier, Paul; Bucari, Claude; Topalian, Samuel; and Baud, Alain, 4,250,906, Cl. 135-1.00A.
Bauer, Alexander; Leistner, Gerhard; Muller, Gerhard; and Sell, Gunther, to Hoechst Aktiengesellschaft. Device for the biological purification of waste water. 4,251,371, Cl. 210-197.000.
Bauer, Kurt; Korber, Alfred; and Bork, Karl-Heinz, to Bayer Aktiengesellschaft. Macrocyclic diesters. 4,251,448, Cl. 260-340.200.
Bauer, Walter; Krobel, Heinz; and Farber, Heinrich, to AGFA-Gevaert, A.G. Arrangement for closing and opening a film sheet cassette, and film sheet cassette provided with such arrangement. 4,251,150, Cl. 354-281.000.
Bauer, Walter, to AGFA-Gevaert, A.G. Arrangement for holding X-ray film vacuum cassettes. 4,251,731, Cl. 250-468.000.
Baugh, Charles R.; and Smith, Robert M., to Bell Telephone Laboratories, Incorporated. Digital loop switch for controlling data information having differing transmission characteristics. 4,251,880, Cl. 370-80.000.
Baun, Philip J., Jr., to Bell Telephone Laboratories, Incorporated. Parity circuits. 4,251,884, Cl. 371-49.000.
Baxter Travenol Laboratories, Inc.: *See—*
Becker, Lawrence F.; and Cobean, Richard W., 4,251,305, Cl. 156-86.000.
Goldhaber, Richard P.; Munsch, John M.; and Wolf, Ludwig, Jr., 4,251,310, Cl. 156-273.000.
Bayer Aktiengesellschaft: *See—*
Bauer, Kurt; Korber, Alfred; and Bork, Karl-Heinz, 4,251,448, Cl. 260-340.200.
Braden, Rudolf; and Wagner, Kuno, 4,251,462, Cl. 564-455.000.
Brandes, Wilhelm; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Kramer, Wolfgang, 4,251,512, Cl. 424-164.000.
de Montigny, Armand; and Toepsch, Hans, 4,251,596, Cl. 428-447.000.
Feyen, Peter; Preiss, Michael; and Metzger, Karl G., 4,251,524, Cl. 424-226.000.
Humme, Gert; Ott, Karl-Heinz; Hardt, Dietrich; and Dinges, Karl, 4,251,645, Cl. 525-75.000.
Mietzsch, Fritz; Rudolph, Hans; Wolfers, Heinrich; and Alberts, Heinrich, 4,251,650, Cl. 526-194.000.
Recker, Klaus; and Reinecke, Gerd, 4,251,427, Cl. 260-37.00N.
Recker, Klaus; Reinecke, Gerd; and Kraft, Karl, 4,251,428, Cl. 260-37.00N.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, 4,251,540, Cl. 424-273.00R.
Reischl, Artur, 4,251,401, Cl. 260-9.000.
Reischl, Artur, 4,251,638, Cl. 521-128.000.
Wagner, Kuno; Niggemann, Johanness; Findeisen, Kurt; and Scheinpflug, Hans, 4,251,255, Cl. 71-27.000.
Bayer, Arthur C.: *See—*
Magee, Walter L.; and Bayer, Arthur C., 4,251,451, Cl. 260-413.000.
BBC Brown, Boveri & Company, Limited: *See—*
Germann, Willy, 4,250,713, Cl. 62-55.000.
Germann, Willy, 4,251,680, Cl. 174-18.000.
Germann, Willy, 4,251,745, Cl. 310-52.000.
Zehnder, Gottlieb, 4,250,711, Cl. 60-605.000.
Beatty, Theodore R., to Union Carbide Corporation. High pressure safety vent for galvanic dry cells. 4,251,602, Cl. 429-54.000.
Beaudoin, Jimmy A. Flue stack maintenance system utilizing replaceable liners. 4,250,609, Cl. 29-421.00R.
Bechtel International Corporation: *See—*
Shoemaker, Robert S., 4,251,352, Cl. 209-45.000.
Beck, Gerhard; Bartmann, Wilhelm; Lerch, Ulrich; and Schokens, Bernward, to Hoechst Aktiengesellschaft. Analogues of prostanoic acids. 4,251,669, Cl. 560-121.000.
Beck, John W., Jr. Scrubbing device. 4,250,587, Cl. 15-28.000.
Beck, Kurt-Gunther; Pollert, Georg; and Rohde, Wolfgang, to Bergwerksverband GmbH. Process and apparatus for preheating coking coal. 4,251,207, Cl. 432-14.000.
Becker, Kurt; and Schaar, Lothar, to Heye, Hermann. Cooling system for molds. 4,251,253, Cl. 65-267.000.
Becker, Lawrence F.; and Cobean, Richard W., to Baxter Travenol Laboratories, Inc. Method of radiant heat sealing of a balloon onto a catheter employing tinted shrink tubing. 4,251,305, Cl. 156-86.000.
Beckmann, Klaus; and Grisebach, Hans-Theodor, to Gewerkschaft Eisenhutte Westfalia. Mineral mining installation. 4,251,110, Cl. 299-17.000.
Beebe Brothers, Inc.: *See—*
Suzuki, Noritoshi; Tsubokawa, Masakatsu; Bathum, Roy N., Jr.; and Selset, Ron S., 4,251,060, Cl. 254-356.000.
Beecham Group Limited: *See—*
Evans, John M., 4,251,537, Cl. 424-267.000.

Beelitz, Howard R., to RCA Corporation. Current source, as for switching PIN diodes. 4,251,742, Cl. 307-270.000.

Beger, Robert W.: *See—*
Hensler, Paul L.; Church, Delmar F.; and Beger, Robert W., 4,251,498, Cl. 423-315.000.

Beggs, Donald; and Escott, Robert M., to Midrex Corporation. Method for direct reduction of metal oxide to a hot metallized product in solid form. 4,251,267, Cl. 75-35.000.

Behnisch, Roland, to Braun & Kemmler GmbH & Co. KG. Pressure cooker having safety means. 4,251,007, Cl. 220-316.000.

Bekey, Ivan; and Wolk, Roger S. Apparatus for constructing registered teeth castings. 4,251,209, Cl. 433-34.000.

Belart, Juan, to ITT Industries, Inc. Brake valve. 4,251,114, Cl. 303-6.00A.

Belinsky, Sidney I. Under-the-roof loader. 4,251,098, Cl. 294-67.0AA.

Bell Telephone Laboratories, Incorporated: *See—*
Baugh, Charles R.; and Smith, Robert M., 4,251,880, Cl. 370-80.000.
Baun, Philip J., Jr., 4,251,884, Cl. 371-49.000.
Fraley, Phillip E.; and Lapinsky, Ronald L., 4,251,621, Cl. 430-312.000.
Jin, Sungho, 4,251,293, Cl. 148-101.000.
Marcatili, Enrique A. J., 4,251,130, Cl. 350-96.140.

Beller, Frank W., to Recreation Systems Co. Child recreation structure. 4,251,069, Cl. 272-113.000.

Beloit Corporation: *See—*
Oas, David C., 4,251,203, Cl. 425-526.000.

Bendix Corporation, The: *See—*
Blatter, Albert; and Miller, John, 4,250,745, Cl. 73-118.000.
Borkowski, Donald F., 4,250,978, Cl. 188-1.00A.
Kluger, Michael A., 4,250,980, Cl. 188-79.50P.
Martinic, Jack, 4,250,795, Cl. 91-445.000.
Sutton, Robert W., 4,250,842, Cl. 123-472.000.
Taplin, Lael B., 4,250,857, Cl. 123-448.000.

Berend, Francis T., to Societe Anonyme Parinter. Method of molding gloves. 4,251,574, Cl. 427-282.000.

Berezin, Gilbert H.: *See—*
Aldrich Paul E.; and Berezin, Gilbert H., 4,251,534, Cl. 424-258.000.
Aldrich, Paul E.; and Berezin, Gilbert H., 4,251,659, Cl. 546-102.000.

Berg, Lawrance F., to Caterpillar Tractor Co. Cushioning device for fluid jacks. 4,250,793, Cl. 91-407.000.

Bergen, David A.: *See—*
Scardina, Mark V.; and Bergen, David A., 4,251,804, Cl. 340-347.00R.

Bergman, Ernest R. Stove heat exchanger. 4,250,864, Cl. 126-34.000.

Bergmann, Eduard: *See—*
Speidel, Volker; Bergmann, Eduard; and Worlitz, Lothar, 4,251,723, Cl. 250-229.000.

Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, to Hoechst Aktiengesellschaft. Process for the dechlorination and cooling of the anolyte of the alkali metal halide electrolysis. 4,251,335, Cl. 204-98.000.

Bergner, Hans L.: *See—*
Jespersen, Knud; Bergner, Hans L.; and Buller-Colthurst, Guy E., 4,250,917, Cl. 137-563.000.

Bergwerksverband GmbH: *See—*
Beck, Kurt-Gunther; Pollert, Georg; and Rohde, Wolfgang, 4,251,207, Cl. 432-14.000.

Berico Industries, Inc.: *See—*
Botkins, Walter Y.; Bussell, Jack D.; Scott, Nicholas B.; and Wood, William I., 4,250,632, Cl. 34-169.000.

Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., to RCA Corporation. Apparatus for and method of supporting a crucible for EFG growth of sapphire. 4,251,206, Cl. 432-5.000.

Berler, Robert M. Food holder accessory for food processor. 4,250,771, Cl. 81-3.00R.

Bernardi, Richard B.: *See—*
Kellogg, Seeley C.; Peluso, Philip J.; and Bernardi, Richard B., 4,251,779, Cl. 331-1.00A.

Bernier, Lornie J.; and Das, Tapan K., to Textron Inc. Dyeable and dyed polymer-coated articles. 4,251,582, Cl. 428-99.000.

Berry, James I.: *See—*
Martinec, Richard C.; Berry, James I.; and Stokes, Paul D., 4,250,750, Cl. 73-308.000.

Berz, Gerhard, to Schloemann-Siemag Aktiengesellschaft. System for selectively transferring flexible and relatively bending-resistant shaped sections of different cross-sectional form between continuous small structural and merchant mills and cooling beds disposed downstream thereof. 4,250,729, Cl. 72-251.000.

Bessouat, Roger; Marjollet, Jacques; and Palacio, Gerard, to Societe Anonyme dite: Stein Industrie. Device for drying and superheating steam. 4,250,841, Cl. 122-483.000.

Betts, Max W.; and Flavell, John, to Courtaulds Limited. Take-up mechanism. 4,250,722, Cl. 66-146.000.

Beukes, Quintin J.: *See—*
Dry, Leonard J.; Kleynjan, Cornelius; and Beukes, Quintin J., 4,251,346, Cl. 208-10.000.

Biax Fiberfilm Corporation: *See—*
Schwarz, Eckhard C. A., 4,251,585, Cl. 428-188.000.

Biehl, Harold R.: *See—*
Smith, David T.; and Biehl, Harold R., 4,251,273, Cl. 75-200.000.

Biermans, Andreas J., to Stamicarbon, B.V. Process for the separation of NH_3 and CO_2 from mixtures of NH_3, CO_2 and water. 4,251,235, Cl. 55-70.000.

Biglin, Timothy J., to Horstmann Gear Group Ltd. Battery powered gas level indicator. 4,250,737, Cl. 73-23.000.

Birdsong, William D., Jr. Apparatus and method for manufacturing gas-filled balls with precision. 4,251,073, Cl. 273-61.00D.

Black & Decker Inc.: *See—*
Sauerwein, William D.; and Walton, Richard E., II, 4,250,613, Cl. 29-597.000.

Blandin, Denis, to Essilor International, Cie Generald d'Optique. Annular gasket for moulding lenses for organic material. 4,251,474, Cl. 264-1.100.

Blankenship, Michael G., to Corning Glass Works. Method of making optical devices. 4,251,251, Cl. 65-3.00A.

Blatter, Albert; and Miller, John, to Bendix Corporation, The. High dynamic response mass rate fluid flow sensor. 4,250,745, Cl. 73-118.000.

Bleckmann, Ingo; and Adam, Wilhelm. Heater assembly. 4,251,720, Cl. 219-541.000.

Bleich, Simon. Punching tool. 4,250,786, Cl. 83-691.000.

Bleicher, Dan: *See—*
Rees, Frederick H.; and Bleicher, Dan, 4,251,684, Cl. 178-3.000.

Bleicher, Manfred: *See—*
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,250,971, Cl. 173-21.000.

Bleistahl G.m.b.H.: *See—*
Koehler, Michael; and Petry, Wolfgang, 4,251,274, Cl. 75-252.000.

Blochl, Hanns: *See—*
Schnall, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, 4,251,155, Cl. 355-15.000.

Blonder-Tongue Laboratories, Inc.: *See—*
Lander, Victor A., 4,251,818, Cl. 343-819.000.

Bloom, Arlene N., executrix: *See—*
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,251,617, Cl. 430-234.000.

Bloom, Stanley M., deceased (by Bloom, Arlene N., executrix); and Sachdev, Krishna G., to Polaroid Corporation. Novel silver complexing agents. 4,251,617, Cl. 430-234.000.

Bluhm, Stanley R.: *See—*
Knox, Kilbourne H.; and Bluhm, Stanley R., 4,251,115, Cl. 303-10.000.

Blumberg, Ruth: *See—*
Alter, John E.; and Blumberg, Ruth, 4,251,671, Cl. 562-580.000.

Blumcke, Alfred: *See—*
Vahlensieck, Hans-Joachim; Fischer, Peter; and Blumcke, Alfred, 4,251,282, Cl. 106-289.000.

Bodenmann, Hans U.; Van Herle, Louis P.; Michel, Luc Y.; Martens, Winand H.; and Pins, Heinrich, to Capsugel AG Corporation. Locking capsule filled with viscous material. 4,250,997, Cl. 206-528.000.

Bodenmann, Peter, to Casutt, Toni. Bottle closing device. 4,251,003, Cl. 215-254.000.

Boeing Company, The: *See—*
Cambigue, Arthur E.; Burton, James M.; and Tieden, Jansey D., 4,251,858, Cl. 364-102.000.

Bogdanovich, Sabir Y.: *See—*
Pakki, Viktor I.; Guseinov, Chingiz S.; Bogdanovich, Sabir Y.; and Guzhin, Petr D., 4,251,375, Cl. 210-304.000.

Boidron, Michel. Chimney throat. 4,250,801, Cl. 98-59.000.

Boldt, Robert R., to Agridustrial Electronics, Inc. Relative motion monitor. 4,251,759, Cl. 318-490.000.

Bolen, Charles E.: *See—*
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,577, Cl. 428-378.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,586, Cl. 428-220.000.

Boliden Aktiebolag: *See—*
Petersson, Stig A.; and Norro, Allan F., 4,251,715, Cl. 219-284.000.

Bolliger, Martin: *See—*
Buxmann, Kurt; Bolliger, Martin; and Gyongyos, Ivan, 4,250,950, Cl. 164-430.000.

Bomar, William H., to Monarch Manufacturing Co. Clad window. 4,250,680, Cl. 52-656.000.

Bone, Dale H., to Honeywell Information Systems Inc. Drill monitor system. 4,251,872, Cl. 364-551.000.

Bonne, Ulrich; Nelson, Lorne W.; and Torborg, Ralph H., to Honeywell Inc. Furnace control using induced draft blower and exhaust stack flow rate sensing. 4,251,025, Cl. 236-14.000.

Bonnet, Ludwig, to Richard Wolf GmbH. Endoscopes. 4,250,873, Cl. 128-7.000.

Bonnie, G. Patrick; and Schuster, Steven C., to Control Data Corporation. Bubble memory chip and method for manufacture. 4,251,319, Cl. 156-656.000.

Booker, William G.; and Bregoff, Donald L. Boat mooring device. 4,250,827, Cl. 114-230.000.

Booth, Inc.: *See—*
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,250,919, Cl. 137-607.000.

Booth, Jack J.; Branch, William C.; and Kidd, Robert P., to Booth, Inc. Constant flow valve. 4,250,919, Cl. 137-607.000.

Boots Company Limited, The: *See—*
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,251,262, Cl. 71-92.000.

Borchardt, Robert E.: *See—*
Zaffrann, Albert A.; Borchardt, Robert E.; and Grabarczyk, Frank A., 4,251,700, Cl. 200-146.00R.

Borden, Inc.: *See*—
Columbus, Peter S., 4,251,400, Cl. 260-8.000.
Borg-Warner Corporation: *See*—
Tan, King-Han; and de Greef, Jan L., 4,251,642, Cl. 525-66.000.
Bork, Karl-Heinz: *See*—
Bauer, Kurt; Korber, Alfred; and Bork, Karl-Heinz, 4,251,448, Cl. 260-340.200.
Borkowski, Donald F., to Bendix Corporation, The. Lining wear sensor. 4,250,978, Cl. 188-1.00A.
Bostick, Edgar E.: *See*—
Mark, Victor; and Bostick, Edgar E., 4,251,434, Cl. 260-45.8RW.
Bothun, Eugene L., to Windsor Industries, Inc. Cyclone-type aspirated separator for washing dirt-laden dry airstreams. 4,251,241, Cl. 55-238.000.
Botkins, Walter Y.; Bussell, Jack D.; Scott, Nicholas B.; and Wood, William I., to Berico Industries, Inc. Inlet duct for recirculating grain dryers. 4,250,632, Cl. 34-169.000.
Bottrill, John, to Britax (Wingard) Limited. Remotely controlled rear-view mirror assembly. 4,250,767, Cl. 74-501.00M.
Bourgraf, Elroy E.; Dunn, Robert E.; and Self, Kenneth R., to Ferno-Washington, Inc. Business machine cart with trunk loading attachment. 4,251,178, Cl. 414-343.000.
Bouwhuis, Gijsbertus; and Lamboo, Theodorus F., to U.S. Philips Corporation. Method and arrangement for aligning a mask pattern relative to a semiconductor substrate. 4,251,160, Cl. 356-401.000.
Bowen, Rafael L., to American Dental Association Health Foundation. Use of a polyfunctional surface-active comonomer and other agents to improve adhesion between a resin or composite material and a substrate. 4,251,565, Cl. 427-2.000.
Bowles Fluidics Corporation: *See*—
Stouffer, Ronald D., 4,250,799, Cl. 98-2.080.
Bowling, Carlton L. Vise. 4,251,066, Cl. 269-283.000.
Bowman, Henry T. A., to English Clays Lovering Pochin & Co., Ltd. Processing of calcium carbonate minerals. 4,251,351, Cl. 209-5.000.
Boyson, Bert; Gallagher, Terence J.; and Porsche, William E., to Perkin-Elmer Corporation, The. Computer controlled inspector/printer document inspection. 4,250,806, Cl. 101-2.000.
BP Chemicals Limited: *See*—
Marsh, Christopher R.; and Russell, James A., 4,251,325, Cl. 203-2.000.
Brackenbush, Larry W.; and Hoenes, Glenn R., to United States of America, Energy. Glove box shield. 4,251,123, Cl. 312-1.000.
Braden, Rudolf; and Wagner, Kuno, to Bayer Aktiengesellschaft. Aminomethyl cyclododecanes, a process for their production and their use as corrosion inhibitors. 4,251,462, Cl. 564-455.000.
Brady, Donnie G.; Williams, Ralph P.; and Hill, Harold W., Jr., to Phillips Petroleum Company. Chemical treatment of poly(arylene sulfide)-containing articles. 4,251,575, Cl. 427-341.000.
Bragas, Peter; and Eschke, Bernd, to Robert Bosch GmbH. Vehicular direction guidance system, particularly for interchange of information between road mounted units and vehicle mounted equipment. 4,251,797, Cl. 340-32.000.
Branch, William C.: *See*—
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,250,919, Cl. 137-607.000.
Brandes, Wilhelm; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Kramer, Wolfgang, to Bayer Aktiengesellschaft. Synergistic fungicidal compositions containing 1,2,4-triazole derivatives. 4,251,512, Cl. 424-164.000.
Brandes, Wilhelm: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, 4,251,540, Cl. 424-273.00R.
Brandt, Inc.: *See*—
Lueschen, William K., 4,250,904, Cl. 133-2.000.
Brandt, Klaus: *See*—
Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus, 4,251,606, Cl. 429-194.000.
Brantley, Ralph H. Ice maker conversion apparatus and method. 4,250,718, Cl. 62-354.000.
Brasseux, Robert W. Oil well production training device. 4,251,217, Cl. 434-219.000.
Braun & Kemmler GmbH & Co. KG: *See*—
Behnisch, Roland, 4,251,007, Cl. 220-316.000.
Braun, Leonard C., to Illinois Tool Works Inc. Wheel assembly for use in an apparatus for multipackaging containers. 4,250,682, Cl. 53-48.000.
Braun, Manfred: *See*—
Niklaus, Bernd; Braun, Manfred; and Maier, Roland, 4,250,765, Cl. 74-388.0PS.
Bray, Thomas B. Tassel puller. 4,250,697, Cl. 56-51.000.
BRECO Kunststoffverarbeitungs-GmbH & Co. KG: *See*—
Breher, Rudolf, 4,251,306, Cl. 156-138.000.
Bredow, Walter, to C. Behrens AG. Press for punching and cutting plate-shaped workpieces, especially sheet metal workpieces. 4,250,784, Cl. 83-518.000.
Bregoff, Donald L.: *See*—
Booker, William G.; and Bregoff, Donald L., 4,250,827, Cl. 114-230.000.
Breher, Rudolf, to BRECO Kunststoffverarbeitungs-GmbH & Co. KG. Method of producing a reinforced endless toothed belt having a fabric cover. 4,251,306, Cl. 156-138.000.
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., to Griffin International, Inc. Pump valve assembly. 4,251,240, Cl. 55-168.000.
Brent, Albert: *See*—
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,251,228, Cl. 48-197.00R.
Breslow, Jeffrey D.: *See*—
Jaworski, Eugene; and Breslow, Jeffrey D., 4,251,075, Cl. 273-113.000.
Brett, Colin E. P. Drilling accessory. 4,251,171, Cl. 408-67.000.
Bridgestone Tire Company Limited: *See*—
Morita, Minoru; and Takamatsu, Tetsuya, 4,251,500, Cl. 423-449.000.
Shibata, Shoson; Sato, Akio; Hayakawa, Yoshihiro; and Bamba, Fumio, 4,250,939, Cl. 152-362.00R.
Britax Weathershields Limited: *See*—
Holt, Gordon J., 4,251,104, Cl. 296-216.000.
Britax (Wingard) Limited: *See*—
Bottrill, John, 4,250,767, Cl. 74-501.00M.
Smallbone, Robert A., 4,251,316, Cl. 156-634.000.
British Airways Board: *See*—
Vassie, Craig D.; and Fisher, Alexander B., 4,250,746, Cl. 73-178.00T.
Brittain, David R.; and Wood, Robin, to Imperial Chemical Industries Limited. Phthalazin-4-ylacetic acid derivatives. 4,251,528, Cl. 424-250.000.
Brockmeyer, Heinz P., to Schmidt-Reuter Ingenieurgesellschaft mbH & Co. KG. Outlet tube for air conditioning systems. 4,250,800, Cl. 98-40.00C.
Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, to Exxon Research & Engineering Co. Amine derivatives of thio-bis-lactone acids in combination with coadditive hydrocarbons are flow improvers for middle distillate fuel oils. 4,251,232, Cl. 44-63.000.
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., to Boots Company Limited, The. 1-Carbamoyl-1,2,4-triazole herbicidal agents. 4,251,262, Cl. 71-92.000.
Brooks, Burton, to Chemithon Corporation, The. Method for treating effluent gas from sulfonation process. 4,251,456, Cl. 260-505.00R.
Brovman, Mikhail Y.; Marchenko, Ivan K.; Kozy, Nikolai M.; Efimov, Viktor A.; and Yakobshe, Richard Y. Semicontinuous casting apparatus. 4,250,949, Cl. 164-425.000.
Brown, Charles D.; Plummer, Cole N.; Tripp, Roger N.; and Fernald, Maurice E., to General Signal Corporation. Water ring rotary air compressor. 4,251,190, Cl. 417-68.000.
Brown, George: *See*—
Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, 4,251,798, Cl. 340-146.3SY.
Brown, Harold M.: *See*—
Owen, Jeffrey D.; and Brown, Harold M., 4,251,470, Cl. 260-990.000.
Brown, Jerald E., to Klebanow, Simon. Method for the fluid treatment of textiles. 4,250,582, Cl. 8-149.100.
Brown, Michael J., to GAF Corporation. Phenoxybenzylphosphonium salts and derivatives thereof and use as fungicides. 4,251,522, Cl. 424-214.000.
Bruckner, Hermann; and Emsperger, Werner, to Kraftwerk Union Aktiengesellschaft. Combined gas-steam power plant with a fuel gasification device. 4,250,704, Cl. 60-39.120.
Bruneau, Lawrence W., to Vibra-Feed Inc. Counting apparatus. 4,251,008, Cl. 221-7.000.
Brunswick Corporation: *See*—
Stephens, Frank H., Jr., 4,250,829, Cl. 440-1.000.
Bruzzese, Tiberio; Ferrari, Lorenzo; and Notarianni, Aurelio F. Glucofuranose derivatives. 4,251,520, Cl. 424-180.000.
Bryden, Joseph E., to Raytheon Company. CRT Digital brightness control. 4,251,755, Cl. 315-383.000.
Bucari, Claude: *See*—
Rivier, Paul; Bucari, Claude; Topalian, Samuel; and Baud, Alain, 4,250,906, Cl. 135-1.00A.
Buchel, Karl H.: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, 4,251,540, Cl. 424-273.00R.
Buckler, Lawrence A., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Sonobuoy simulator device. 4,250,634, Cl. 434-6.000.
Budrys, Vitolis, to Kobe, Inc. Centrifugal pump. 4,251,184, Cl. 415-89.000.
Buehler, Howard D. Grain chute. 4,250,986, Cl. 193-5.000.
Buerkert, Antoinette P.; and Hughes, George T. Pinking scissors with replaceable blades. 4,250,619, Cl. 30-230.000.
Buller-Colthurst, Guy E.: *See*—
Jespersen, Knud; Bergner, Hans L.; and Buller-Colthurst, Guy E., 4,250,917, Cl. 137-563.000.
Bundy, Gordon L., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-9-deoxy-9-methylene-5,6-didehydro-PGF$_1$ compounds. 4,251,463, Cl. 564-454.000.
Burdick, Glen A., to GTE Products Corporation. One piece astigmatic grid for color picture tube electron gun. 4,251,747, Cl. 313-348.000.
Burg, Robert J. Frame structure having reinforced joints. 4,250,679, Cl. 52-654.000.
Burkwall, Morris P., Jr.; Leyh, Joseph C., Jr.; and Reagan, John G., to Quaker Oats Company, The. Pet food with caseinate replacement. 4,251,556, Cl. 426-332.000.
Burnham, Robert D.: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,251,780, Cl. 331-94.50H.
Burroughs Corporation: *See*—
Clark, Becky J., 4,251,879, Cl. 370-60.000.
Knuth, Kenneth V.; and Walton, Charles E., II, 4,250,615, Cl. 29-741.000.
Templeton, William B., 4,251,000, Cl. 209-547.000.

Burton, James M.: *See*—
Cambigue, Arthur E.; Burton, James M.; and Tieden, Jansey D., 4,251,858, Cl. 364-102.000.

Bush, Vannevar, to Massachusetts Institute of Technology. Piston sealing. 4,250,953, Cl. 165-1.000.

Bussell, Jack D.: *See*—
Botkins, Walter Y.; Bussell, Jack D.; Scott, Nicholas B.; and Wood, William I., 4,250,632, Cl. 34-169.000.

Butler Ventamatic Corp.: *See*—
Siegel, Howell T.; Siegel, Jeffrey I.; and Shank, Richard E., 4,251,026, Cl. 236-49.000.

Buxmann, Kurt; Bolliger, Martin; and Gyongyos, Ivan, to Swiss Aluminium Ltd. Mould with roughened surface for casting metals. 4,250,950, Cl. 164-430.000.

B.V. Machinefabriek en IJzergieterij*: *See*—
Baas, Hendrik B., 4,251,054, Cl. 251-367.000.

Bykov, Mikhail A.: *See*—
Andreev, Evgeny I.; Bykov, Mikhail A.; Zolotarev, Anatoly K.; and Sazhin, Dmitry S., 4,250,929, Cl. 137-607.000.

Bynum, Brian T., to Rockwell International Corporation. Multiple tuned circuit correction apparatus. 4,251,782, Cl. 333-18.000.

Byrnes, Charles E. Tool for opening and closing ski boots. 4,250,595, Cl. 24-71.300.

C. Behrens AG: *See*—
Bredow, Walter, 4,250,784, Cl. 83-518.000.

C.O.M.E.T. Compagnie de Materiel et d'Equipements Techniques: *See*—
Moryl, Richard, 4,250,732, Cl. 72-357.000.

Cabral, Julio A. R.: *See*—
Coutinho, Paulo H. D. A.; and Cabral, Julio A. R., 4,251,677, Cl. 585-639.000.

Cailliau, Michel; and Vincent, Philippe, to Schlumberger Technology Corporation. Method and apparatus for exploration of geological formation tilt in boreholes. 4,251,773, Cl. 324-347.000.

Calamur, Narasimhan, to Du Pont de Nemours, E. I., and Company. Jet mixing in preparation of monodisperse silver halide emulsions. 4,251,627, Cl. 430-569.000.

Calbo, Leonard J., to King Industries, Inc. Aromatic sulfonic acid oxa-azacyclopentane adducts. 4,251,665, Cl. 548-215.000.

Caldwell, Robert E., to Fairchild Camera and Instrument Corporation. Method for forming shaped buried layers in semiconductor devices utilizing etching, epitaxial deposition and oxide formation. 4,251,300, Cl. 148-175.000.

Calfax, Inc.: *See*—
Segan, Marc H.; and Swarztrauber, Sayre A., 4,250,787, Cl. 84-1.010.

Callejas, Ricardo J.; and Mitchell, John R., to Phillips Petroleum Company. Method and apparatus for improving the selectivity of a process for hydrogenating acetylene to ethylene. 4,251,674, Cl. 585-272.000.

Cam Gears Limited: *See*—
Adams, Frederick J., 4,250,909, Cl. 137-101.000.

Cambigue, Arthur E.; Burton, James M.; and Tieden, Jansey D., to Boeing Company, The. Paging, status monitoring and report compiling system for support, maintenance and management of operator-supervised automatic industrial machines. 4,251,858, Cl. 364-102.000.

Camilleri, Thomas M., to Sycam Advanced Technology Corp. Shock absorber. 4,251,064, Cl. 267-136.000.

Campbell, Bruce D.; and Lopez, Eugene F., to Raychem Corporation. Heat-recoverable articles and their use. 4,251,304, Cl. 156-85.000.

Campbell, Robert A.; and Spector, George. Cigarette filter holders with optional snorkel bypass accessory. 4,250,900, Cl. 131-189.000.

Campbell, Steven J.: *See*—
Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., 4,250,896, Cl. 130-27.00T.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Buckler, Lawrence A., 4,250,634, Cl. 434-6.000.

Canadian Patents & Dev. Ltd.: *See*—
Hastings-James, Richard; and Holbrook, George W., 4,251,689, Cl. 179-1.0HF.

Cannella, Vincent D.; and McCormick-Goodhart, Mark H. Heat-sink imaging method and apparatus for live skin tissue using pulsed energy source. 4,251,564, Cl. 427-1.000.

Canon Kabushiki Kaisha: *See*—
Hara, Toshitami; Sato, Yasushi; Takatori, Yasushi; and Shirato, Yoshiaki, 4,251,824, Cl. 346-140.00R.
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Matsumura, Isao, 4,251,139, Cl. 351-7.000.
Minoura, Kazuo; and Ishii, Masaaki, 4,251,125, Cl. 350-6.500.
Minoura, Kazuo; and Minami, Setsuo, 4,251,126, Cl. 350-6.600.
Sato, Akira; and Isobe, Takashi, 4,251,134, Cl. 350-257.000.
Suzki, Akiyoshi; and Kano, Ichiro, 4,251,129, Cl. 350-91.000.
Tsuji, Sadahiko, 4,251,133, Cl. 350-465.000.

Capsugel AG Corporation: *See*—
Bodenmann, Hans U.; Van Herle, Louis P.; Michel, Luc Y.; Martens, Winand H.; and Pins, Heinrich, 4,250,997, Cl. 206-528.000.

Carasso, Marino G.: *See*—
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,251,748, Cl. 313-371.000.

Carborundum Company, The: *See*—
Chapman, Harry S., 4,250,605, Cl. 29-132.000.

Carl Schenck AG: *See*—
Sigg, Conrad, 4,250,818, Cl. 110-278.000.

Carl Zeiss-Stiftung: *See*—
Grosskopf, Rudolf, 4,250,888, Cl. 128-702.000.

Carlson, Walter S.; Samueloff, Shlomo; and Wasserman, Donald E., to United States of America, Health, Education & Welfare. Depth-sense perception and two-point discrimination aesthesiometers. 4,250,891, Cl. 128-744.000.

Carr, Norman L.; and McGinnis, Edgar L., to Gulf Research & Development Company. Filtration of a coal liquid slurry using polyisobutylene. 4,251,364, Cl. 210-777.000.

Carre, Franklin E. Electronic checklist using solid state readouts. 4,251,813, Cl. 340-706.000.

Carroll, Cliff R. Multiple independent path bubble tonometer. 4,251,483, Cl. 422-68.000.

Carson, Miles T., to Carson, Miles T. Underground service module. 4,251,029, Cl. 237-12.100.

Carswell, William D.; Youd, Arthur; and MacPhail, Alexander C. B., to Shell Oil Company. Lubricating greases. 4,251,431, Cl. 252-40.700.

Carter, James L.; and Barnett, Allan E., to Exxon Research & Engineering Co. Coprecipitated copper-nickel-silica catalysts, preparation and use thereof. 4,251,394, Cl. 252-452.000.

Carter, James L.; and Barnett, Allan E., to Exxon Research & Engineering Co. Process for hydrogenating organic compounds with coprecipitated copper-nickel-silica catalysts. 4,251,672, Cl. 568-814.000.

Casad, Burton M.; and Grimsley, R. Leroy, to Conoco, Inc. Radial design submerged coalescer for separation of liquids. 4,251,369, Cl. 210-104.000.

Casper, Diane. Infusion bag with crossbar suspension. 4,250,990, Cl. 206-0.500.

Castonguay, Roger N.; and Jencks, Charles L., to General Electric Company. Circuit breaker having multiple spring actuating mechanisms. 4,251,702, Cl. 200-153.0SC.

Casutt, Toni: *See*—
Bodenmann, Peter, 4,251,003, Cl. 215-254.000.

Caterpillar Tractor Co.: *See*—
Balzer, David J.; and Sickinger, James D., 4,250,766, Cl. 74-405.000.
Berg, Lawrance F., 4,250,793, Cl. 91-407.000.
Haak, Willard J.; Marsden, Howard A.; and Mueller, James P., 4,250,794, Cl. 91-420.000.
Karstensen, Karl W., 4,251,185, Cl. 415-136.000.
Little, William E., 4,251,082, Cl. 277-87.000.

Cavallino, Francesco; Martinez, Pasquale; Vaccaneo, Stefano; and Allione, Michele, to Fiat Auto S.p.A. Exhaust emission control system for internal combustion engines. 4,250,707, Cl. 60-293.000.

Cavallino, Francesco; Martinez, Pasquale; Schiavuzzi, Roberto; and Allione, Michele, to Fiat Auto S.p.A. Internal combustion engine with exhaust emission control system. 4,250,860, Cl. 123-587.000.

Cave, Ellis K.: *See*—
Sanner, Medford D.; and Cave, Ellis K., 4,251,800, Cl. 340-146.3SY.

Cederqvist, Gunnar N.; and Aberg, Ulf L., to Rockwool Aktiebolag. Method of producing a mineral fiber product. 4,251,320, Cl. 162-55.000.

Celanese Corporation: *See*—
Dalton, Charles A.; and Slinkard, William E., 4,251,393, Cl. 252-443.000.

Central Glass Company, Limited: *See*—
Kobayashi, Yoshiyuki; and Nakamura, Tamio, 4,251,501, Cl. 423-465.000.

Cerny, Rodney A.; and Dolesh, Robert P., to H. K. Ferguson Company, The. Controlled temperature purification of aqueous sodium hydroxide solution. 4,251,490, Cl. 423-179.000.

Ceskoslovenska akademie ved: *See*—
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,251,634, Cl. 521-84.000.

Chafetz, Harry: *See*—
Hammond, Kenneth G.; and Chafetz, Harry, 4,251,380, Cl. 252-34.000.

Chamberlain, Ralph J.; and Ellwanger, Richard E., to American Cyanamid Company. Anionic polymeric flocculant combinations for settling phosphate slimes. 4,251,363, Cl. 210-727.000.

Chambers Corporation: *See*—
Scherer, Richard M., 4,250,865, Cl. 126-41.00D.

Chammas, Edmond D., to Weatherford/DMC, Inc. Chemical cutting apparatus. 4,250,960, Cl. 166-55.000.

Champion International Corporation: *See*—
Gingerich, David L., 4,251,566, Cl. 427-10.000.
Roccaforte, Harry I.; and Dewiggins, Richard J., 4,250,993, Cl. 206-216.000.

Chan, Tsiu C.: *See*—
McKenny, Vernon G.; and Chan, Tsiu C., 4,251,876, Cl. 365-182.000.

Chang, Ching M., to Union Carbide Corporation. High intensity ionization-electrostatic precipitation system for particle removal. 4,251,234, Cl. 55-2.000.

Chang, Shiunn C. Engine with revolutionary internal-combustion unit and compression ratio auto-controlled device. 4,250,843, Cl. 123-43.0AA.

Chao, Wen-Kuei. Knock-out type automatic pencil. 4,251,163, Cl. 401-50.000.

Chapman, Harry S., to Carborundum Company, The. Biaxially stressed fluorinated polymer roll cover and method for making same. 4,250,605, Cl. 29-132.000.

Chapple, Thomas W.: *See*—
Pratt, George W.; Chapple, Thomas W.; and Fahy, Michael J., 4,251,630, Cl. 435-98.000.

Charles K. Kelley and Sons Inc.: *See*—
Kelley, Charles K.; and Jones, William W., 4,251,169, Cl. 406-110.000.
Chatfield, David A.; Rzepka, Joseph F.; and Preble, Alan C., to National Steel Corporation. Method for producing fully-processed low-carbon electrical steel. 4,251,294, Cl. 148-120.000.
Chatwin, Ian M.; and Riordan, Roger H. S. Position indicator. 4,251,035, Cl. 241-37.000.
Check, Frank T., Jr., to Pitney Bowes Inc. Electronic postal meter system. 4,251,874, Cl. 364-900.000.
Chemische Werke Huels A.G.: *See*—
Schoppa, Claus; Fortmann, Wilhelm; and Stei, Armin, 4,251,581, Cl. 428-95.000.
Chemithon Corporation, The: *See*—
Brooks, Burton, 4,251,456, Cl. 260-505.00R.
Chen, Anthony H.; and Jao, Yun-Chi, to Miles Laboratories, Inc. Preparation of a bacterial cell aggregate. 4,251,632, Cl. 435-180.000.
Cheney, Oliver F., to Alco Standard Corporation. Method and apparatus for detecting the presence of water in oil. 4,251,809, Cl. 340-603.000.
Cherkofsky, Saul C., to Du Pont de Nemours, E. I., and Company. Antiinflammatory 4,5-diaryl-2-nitroimidazoles. 4,251,535, Cl. 424-263.000.
Cheselka, Stephen. Pet sanitary facility. 4,250,834, Cl. 119-1.000.
Chevron Research Company: *See*—
Hess, Patrick H., 4,250,963, Cl. 166-288.000.
Kurkov, Victor P., 4,251,467, Cl. 568-393.000.
McCoy, Charles S.; and Houston, Robert J., 4,251,349, Cl. 208-64.000.
O'Rear, Dennis J.; and Mayer, Jerome F., 4,251,348, Cl. 208-61.000.
Chi, Henry K., to Monsanto Company. Polyvinylbutyral laminates. 4,251,591, Cl. 428-315.000.
Chiang, Sherman H. Cover protected brush with collapsible bristles. 4,250,590, Cl. 15-203.000.
Child, Edward T.: *See*—
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,251,228, Cl. 48-197.00R.
Childs, William V.: *See*—
Mark, Harold W.; and Childs, William V., 4,251,673, Cl. 568-858.000.
Chimura, Kozo: *See*—
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, 4,251,878, Cl. 368-257.000.
Chinoin Gyogyszer es Vegyeszett Termekek Gyara: *See*—
Dolhay, Balazs; and Barczy, Zsolt, 4,250,892, Cl. 128-758.000.
Chiovini, Jacky: *See*—
Margolis, Geoffrey; and Chiovini, Jacky, 4,251,559, Cl. 426-490.000.
Chitwood, Donald P.: *See*—
Haven, Duane A.; and Chitwood, Donald P., 4,251,610, Cl. 430-25.000.
Chomel, Roger; Martin, Gerard; and Viallon, Georges, to Automobiles M. Berliet. Device to circulate a fluid in a hollow shaft. 4,251,186, Cl. 415-210.000.
Chomerics, Inc.: *See*—
Mayer, Carl P.; and Rothenberg, Robert A., 4,251,734, Cl. 290-5.000.
Chow, Wai Y.; and Heilman, William J., to Gulf Oil Corporation. Novel acetylene end-capped polyimide oligomers. 4,251,417, Cl. 260-30.200.
Chow, Wai Y.; and Thackaberry, S. Paul, to Gulf Oil Corporation. Polyimide oligomers. 4,251,418, Cl. 260-30.200.
Christenson, John C.: *See*—
Drott, Edward R.; Christenson, John C.; and Rathke, Ralph E., 4,251,181, Cl. 414-723.000.
Christenson, Marc: *See*—
Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., 4,250,896, Cl. 130-27.00T.
Christian, Miles W., to Plymouth Locomotive Works, Inc. On-line fluid injecting method. 4,251,477, Cl. 264-82.000.
Christiansen, Gary F. Fixed impulse generator for hook switch flash. 4,251,693, Cl. 179-81.00R.
Christner, Werner: *See*—
Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, 4,250,951, Cl. 164-444.000.
Christoph, Dieter. Portable facing machine. 4,250,778, Cl. 82-4.00R.
Chu, Joseph Y. C.; and Tutihasi, Simpei, to Xerox Corporation. Dielectric overcoated photoresponsive imaging member. 4,251,612, Cl. 430-59.000.
Chung, Alfred: *See*—
Ryan, James W.; and Chung, Alfred, 4,251,628, Cl. 435-24.000.
Church, Brooks D.: *See*—
Orlowski, David C.; and Church, Brooks D., 4,251,633, Cl. 435-288.000.
Church, Delmar F.: *See*—
Hensler, Paul L.; Church, Delmar F.; and Beger, Robert W., 4,251,498, Cl. 423-315.000.
Ciavattoni, Anthony: *See*—
Cushman, Robert H.; Ciavattoni, Anthony; Flynn, John J.; and Schubert, Thomas J., 4,251,730, Cl. 250-439.00P.
Ciba-Geigy Corporation: *See*—
Fattinger, Volker; and Schneider, Jurg, 4,251,236, Cl. 55-84.000.
Felder, Louis; Kirchmayr, Rudolf; and Schmidt, Andreas, 4,251,341, Cl. 204-159.240.
Ilvespaa, Atso; and Fuhrer, Walter, 4,251,542, Cl. 424-274.000.
Lee, Eric C.; Lynam, Peter H.; Theobald, Laurence J. A.; and Wyeth, Harold W., 4,251,579, Cl. 428-73.000.
Loew, Peter; Zink, Rudolf; and Koller, Stefan, 4,251,656, Cl. 542-417.000.
Marshall, Alan, 4,251,492, Cl. 423-226.000.
Randell, Donald R.; and Phillips, Emyr, 4,251,493, Cl. 423-226.000.
Traxler, Peter, 4,251,517, Cl. 424-180.000.
Zinke, Horst; and Lorenz, Joachim, 4,251,469, Cl. 260-942.000.
Citizen Watch Co., Ltd.: *See*—
Umemoto, Toshio, 4,251,604, Cl. 429-98.000.
Claes, Jozef; and De Bruyne, Roger, to N. V. Bekaert S.A. Method and apparatus for demisting gases. 4,251,238, Cl. 55-97.000.
Clark, Alonzo R. Rotary pump with symmetrical by-pass and rotor with resiliently mounted vanes. 4,251,192, Cl. 417-291.000.
Clark, Becky J., to Burroughs Corporation. Speed independent arbiter switch for digital communication networks. 4,251,879, Cl. 370-60.000.
Class, Charles A.; and Scarpati, Thomas S., to United States of America, Army. Method of making rotor blade root end attachment. 4,251,309, Cl. 156-245.000.
Clavin, Edward A.: *See*—
Slavens, Clyde M.; and Clavin, Edward A., 4,250,813, Cl. 104-118.000.
Claxton, Gerald L.: *See*—
Horn, Darrell C.; and Claxton, Gerald L., 4,250,700, Cl. 56-330.000.
Clayton, Eugene L.: *See*—
Andersen, John I.; and Clayton, Eugene L., 4,250,867, Cl. 126-121.000.
Clegg, Frederick W., to Dupaylite Developments Limited. Packaging method and apparatus. 4,250,684, Cl. 53-157.000.
Clements, Herbert A., to S.S.S. Patents Limited. Power transmission system. 4,250,985, Cl. 192-48.700.
Clyde, Robert A.; and Crandall, William B. Multi-purpose ceramic element. 4,251,239, Cl. 55-132.000.
Coal Industry (Patents) Limited: *See*—
Davison, Joseph A.; Hall, Graham W.; Hodges, Newton J.; and Price, David W., 4,251,413, Cl. 260-29.6MM.
Walmsley, Stanley; and Aldridge, William R., 4,251,046, Cl. 248-660.000.
Coats, John H.: *See*—
Whaley, Howard A.; and Coats, John H., 4,251,511, Cl. 424-122.000.
Cobb, William R.; and Barthe, Henry P., to Schroeder Brothers Corporation. Cab mounting for mining machine. 4,250,975, Cl. 180-89.130.
Cobean, Richard W.: *See*—
Becker, Lawrence F.; and Cobean, Richard W., 4,251,305, Cl. 156-86.000.
Cocklereece, Allan R. Poultry nest bank unit. 4,250,837, Cl. 119-48.000.
Cocron, Istvan; and Huber, Theodor, to AGFA-Gevaert, A.G. Focussing system for cameras. 4,251,145, Cl. 354-25.000.
Cocron, Istvan: *See*—
Stemme, Otto; Cocron, Istvan; and Lermann, Peter, 4,251,143, Cl. 354-25.000.
Coignet S.A.: *See*—
Fougea, Bernard, 4,251,059, Cl. 254-338.000.
Cole, Graham M., to Dreamland Electrical Appliances Limited. Heating circuits. 4,251,717, Cl. 219-497.000.
Cole, Graham M., to Dreamland Electrical Appliances Limited. Heating circuits. 4,251,718, Cl. 219-501.000.
Coleman, Allen K., to United Technologies Corporation. Dual speed control circuit for power flow through an inverter. 4,251,735, Cl. 307-46.000.
Coleman, Allen K., to United Technologies Corporation. Method for controlling power flow between an electrochemical cell and a power grid. 4,251,736, Cl. 307-46.000.
Collins, William J. Molten material sampler. 4,250,753, Cl. 73-425.40R.
Collins, William J. Sampler for a hot liquid and connector therefor. 4,250,754, Cl. 73-425.40R.
Collonia, Harald, to VDO Adolf Schindling AG. Device for the control of the position of an element of an internal combustion engine which influences the fuel-air mixture. 4,250,845, Cl. 123-361.000.
Colman, Derek A.; and Thew, Martin T., to National Research Development Corporation. Cyclone separator. 4,251,368, Cl. 210-788.000.
Columbia Chemical Corporation: *See*—
Rosenberg, William E., 4,251,331, Cl. 204-55.00R.
Columbus, Peter S., to Borden, Inc. Hot and cold water redispersible polyvinyl acetate adhesives. 4,251,400, Cl. 260-8.000.
Colwell, Gary R.; and Freeman, Luther, to C_2F Investment Company. On-site wastewater treatment system. 4,251,359, Cl. 210-605.000.
Comane, Jean M.: *See*—
Corcelle, Francois; and Comane, Jean M., 4,251,708, Cl. 219-121.0EM.
Comer, Robert C.; and Tillotson, Henry B., to Toro Company, The. Powered lawn care and cultivating implement. 4,250,695, Cl. 56-12.700.
Commissariat a l'Energie Atomique: *See*—
Corcelle, Francois; and Comane, Jean M., 4,251,708, Cl. 219-121.0EM.
Dolle, Lucien, 4,251,372, Cl. 210-222.000.
Commonwealth Scientific and Industrial Research Organization: *See*—
Floyd, John M., 4,251,271, Cl. 75-73.000.
Laby, Ralph H., 4,251,506, Cl. 424-19.000.
Compagnie Francaise des Petroles: *See*—
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.

Compagnie Francaise d'Etudes et de Construction Technip: *See*—
Gauberthier, Joseph J.; and Paradowski, Henri, 4,251,247, Cl. 62-9.000.

Compagnie Generale pour les Developpements Operationnels de Richesses Sous-Marines (Doris): *See*—
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.

Compagnie Maritime d'Expertises: *See*—
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.

Compania de Transport Aerian Tarom: *See*—
Aron, Ioan; and Tomescu, Ion, 4,251,868, Cl. 364-427.000.

Compen, Johannes M. A. A.; Eisses, Reinhart C. W.; Panis, Constantius J. W.; and Paridaens, Cornelius J. H., to U.S. Philips Corporation. Picture display tube having an internal resistive layer. 4,251,749, Cl. 313-479.000.

Concast AG: *See*—
Willim, Fritz, 4,251,268, Cl. 75-58.000.

Cone, Robert R. Potable container having sanitized straw. 4,251,019, Cl. 229-7.00S.

Conoco, Inc.: *See*—
Casad, Burton M.; and Grimsley, R. Leroy, 4,251,369, Cl. 210-104.000.
Garrison, Harry D., 4,251,453, Cl. 260-448.00A.
Grimsley, R. Leroy, 4,251,361, Cl. 210-703.000.
Peterson, Marvin L.; and Maxson, Orwin G., 4,251,343, Cl. 204-197.000.
Smith, John H., 4,251,323, Cl. 201-29.000.

Conorelec: *See*—
van Cutsem, Philippe, 4,250,689, Cl. 53-443.000.

Conrad, Ulrich; and Niemeier, Gerd, to Daimler-Benz Aktiengesellschaft. Idling adjusting mechanism for injection pumps, especially for diesel injection pumps. 4,250,709, Cl. 60-527.000.

Consan Pacific Incorporated: *See*—
Saurenman, Donald G., 4,250,804, Cl. 99-451.000.

Consolidated Foods Corp.: *See*—
Goodman, James A., 4,250,797, Cl. 93-58.000.

Constructions de Clichy: *See*—
Favrot, Paul, 4,250,667, Cl. 51-237.0CS.

Control Data Corporation: *See*—
Bonnie, G. Patrick; and Schuster, Steven C., 4,251,319, Cl. 156-656.000.

Conway, Carle C.: *See*—
Pappalardo, P. Paul; Conway, Carle C.; and Rodon, Frank, 4,250,698, Cl. 56-202.000.

Cook, Floyd R.; and Anzil, Luis, to Par Enterprises. Bench top printed circuit board scrubbing device. 4,250,588, Cl. 15-77.000.

Coontz, David: *See*—
Shubb, Richard; and Coontz, David, 4,250,790, Cl. 84-318.000.

Coors Container Company: *See*—
McMillin, Danny L.; and Stirbis, James S., 4,250,831, Cl. 118-669.000.

Copal Company Limited: *See*—
Shimizu, Munetaka; and Harada, Hiroyuki, 4,250,780, Cl. 83-176.000.

Copolymer Rubber & Chemical Corporation: *See*—
Joffrion, Ralph K., 4,251,644, Cl. 525-64.000.

Corcelle, Francois; and Comane, Jean M., to La Soudure Autogene Francaise; Commissariat a l'Energie Atomique; L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude; and Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques. Method and apparatus for electron beam welding. 4,251,708, Cl. 219-121.0EM.

Corning Glass Works: *See*—
Blankenship, Michael G., 4,251,251, Cl. 65-3.00A.
Hares, George B., 4,251,278, Cl. 106-47.00Q.

Corno, Maria L.: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.

Corr, Ernst F.; and Munns, Robert J., to Entoleter, Inc. System for reclaiming plastic from metal plated plastic scrap. 4,251,034, Cl. 241-14.000.

Cota, Alain, to Association pour le Transport et l'Affretement-Etablissement Walon S.A. Marine anchor. 4,250,828, Cl. 114-307.000.

Council, Malcolm N.: *See*—
Sizer, Phillip S.; and Council, Malcolm N., 4,251,176, Cl. 414-22.000.

Coupek, Jiri; Filka, Karel; and Kocourek, Jan, to Ceskoslovenska akademie ved. Hydrophilic macroporous three dimensional copolymers of hydroxyalkyl acrylates or methacrylates with crosslinking agents and the method of their manufacturing. 4,251,634, Cl. 521-84.000.

Courtaulds Limited: *See*—
Betts, Max W.; and Flavell, John, 4,250,722, Cl. 66-146.000.

Coutinho, Paulo H. D. A.; and Cabral, Julio A. R., to Petroleo Brasileiro S.A. - Petrobras. Process for obtaining gaseous streams rich in ethene. 4,251,677, Cl. 585-639.000.

Covy, Allan P. Method for cooling metal turnings. 4,250,714, Cl. 62-62.000.

Cowley, Gerald; and Swindells, Richard, to ERCO Industries Limited. Control system for chlorine dioxide plants. 4,251,224, Cl. 23-230.00A.

Cowley, Gerald: *See*—
Swindells, Richard; and Cowley, Gerald, 4,251,503, Cl. 423-478.000.

Cozine, Mark L.: *See*—
Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., 4,250,896, Cl. 130-27.00T.

Crandall, William B.: *See*—
Clyde, Robert A.; and Crandall, William B., 4,251,239, Cl. 55-132.000.

Crane Co.: *See*—
Knox, Kilbourne H.; and Bluhm, Stanley R., 4,251,115, Cl. 303-10.000.

Crane, John C., to Mettoy Company Limited, The. Method of producing a decorated article. 4,251,480, Cl. 264-132.000.

Crawford Collets Limited: *See*—
Franklin, Reginald A., 4,251,084, Cl. 279-1.0ME.

Cremer, Kurt H. L., to Sack & Kiesselbach Maschinenfabrik, GmbH. Method for producing trimming dies. 4,250,731, Cl. 72-354.000.

Cresti, Marcello; and Ugo, Franco, to Ing. C. Olivetti & C., S.p.A. Control unit for a serial printer. 4,251,161, Cl. 400-144.200.

Crounse, Nathan N.; and Schmidt, Paul J., to Sterling Drug Inc. Phthalide compounds, processes and marking systems. 4,251,446, Cl. 260-326.340.

Crowther, Russell L., to General Electric Company. Nuclear reactor utilizing plutonium. 4,251,321, Cl. 176-78.000.

Cseh, Gyorgy: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.

Culhane, Vernon C. Picture frames. 4,250,640, Cl. 40-155.000.

Cull, Neville L.: *See*—
Longo, John M.; and Cull, Neville L., 4,251,496, Cl. 423-239.00A.

Cummings, William M., to Texaco Inc. Glycol polyether-acrylic acid-amine reaction product for fuel and mineral oils. 4,251,670, Cl. 560-169.000.

Cunningham, Noble. Interchangeable filter apparatus. 4,251,374, Cl. 210-232.000.

Curry, Kenneth D. Tire tread cutting machine. 4,250,940, Cl. 157-13.000.

Cushman, Robert H.; Ciavattoni, Anthony; Flynn, John J.; and Schubert, Thomas J., to Pennwalt Corporation. Panoramic dental X-ray machine X-motion drive. 4,251,730, Cl. 250-439.00P.

Custer, Dennis R.: *See*—
Quenneville, Raymond N.; and Custer, Dennis R., 4,251,051, Cl. 251-129.000.

Custer, Michael D.; and Rorabaugh, Gene L. Pizza cutter. 4,250,618, Cl. 30-114.000.

Cutler, John H.: *See*—
Walker, Loren H.; and Cutler, John H., 4,251,763, Cl. 318-803.000.

Cutter Laboratories, Inc.: *See*—
Tankersley, Donald L., 4,251,510, Cl. 424-101.000.

Czuba, Leonard J.: *See*—
Gruetzmacher, Gordon D.; and Czuba, Leonard J., 4,251,563, Cl. 426-605.000.

C_2F Investment Company: *See*—
Colwell, Gary R.; and Freeman, Luther, 4,251,359, Cl. 210-605.000.

Dagostino, Thomas P., to Tektronix, Inc. Time dot display for a digital oscilloscope. 4,251,814, Cl. 340-722.000.

Dagostino, Thomas P., to Tektronix, Inc. Signal-envelope display system for a digital oscilloscope. 4,251,815, Cl. 340-722.000.

Dagostino, Thomas P.: *See*—
Navarro, Luis J.; and Dagostino, Thomas P., 4,251,754, Cl. 315-370.000.

Dai-Ichi Kogyo Seiyaku Co., Ltd.: *See*—
Naka, Akihiro; Honjo, Shuichi; and Aoike, Kaoru, 4,251,229, Cl. 44-51.000.

Daikin Kogyo Co., Ltd.: *See*—
Tomoda, Masayasu; and Ueta, Yutaka, 4,251,399, Cl. 260-4.00R.

Daimler-Benz Aktiengesellschaft: *See*—
Conrad, Ulrich; and Niemeier, Gerd, 4,250,709, Cl. 60-527.000.
Scheying, Heinz, 4,250,859, Cl. 123-501.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Sakamoto, Seiya; and Hohki, Tetsuo, 4,251,625, Cl. 430-396.000.

Dalal, Vikram L., to University of Delaware, The. Amorphous semiconductor solar cell. 4,251,287, Cl. 136-258.000.

Dalton, Charles A.; and Slinkard, William E., to Celanese Corporation. Attrition resistant catalysts. 4,251,393, Cl. 252-443.000.

Daman, Ernest L., to Foster Wheeler Energy Corporation. Vapor generator utilizing stacked fluidized bed and a water-cooled heat recovery enclosure. 4,250,839, Cl. 122-4.00D.

Dammann, Martin, to Pierburg GmbH & Co. KG. Carburetor for combustion engines. 4,251,472, Cl. 261-44.00C.

Damon Corporation: *See*—
Lim, Franklin; and Moss, Richard D., 4,251,387, Cl. 252-316.000.

Danfoss A/S: *See*—
Hansen, Henning M., 4,251,776, Cl. 328-144.000.
Pedersen, Hans-Kristian; Sorensen, Frode; and Hyldal, Jorgen, 4,251,758, Cl. 318-254.000.
Vind, Holger V., 4,251,793, Cl. 338-22.00R.

Dangschat, Holmer, to Dr. Johannes Heidenhain GmbH. Rotary table drive mechanism. 4,250,763, Cl. 74-208.000.

Danner, Bernard; Gerber, Hans; and Pummer, Helmut, to Sandoz Ltd. Reaction products of a polyacrylamide formaldehyde, a secondary amine and an-nh group-containing functional derivative of an acid. 4,251,410, Cl. 260-29.40A.

Danvoss A/S: *See*—
Petersen, Hans C., 4,251,194, Cl. 418-61.00B.

Dardik, Herbert; Smith, Michael; Ibrahim, Ibrahim M.; and Dardik, Irving I., to Dardik Surgical Associates, P.A. Remote manual injecting apparatus. 4,250,887, Cl. 128-655.000.
Dardik, Irving I.: *See—*
Dardik, Herbert; Smith, Michael; Ibrahim, Ibrahim M.; and Dardik, Irving I., 4,250,887, Cl. 128-655.000.
Dardik Surgical Associates, P.A.: *See—*
Dardik, Herbert; Smith, Michael; Ibrahim, Ibrahim M.; and Dardik, Irving I., 4,250,887, Cl. 128-655.000.
Das, Tapan K.: *See—*
Bernier, Lornie J.; and Das, Tapan K., 4,251,582, Cl. 428-99.000.
Data General Corporation: *See—*
Marino, Jerry C.; and Fortini, Edward C., 4,251,095, Cl. 292-54.000.
David Parr & Associates Ltd.: *See—*
Parr, David, 4,251,712, Cl. 219-203.000.
Daviduk, Nicholas; and Haddad, James H., to Mobil Oil Corporation. Method and apparatus for converting alcohols to hydrocarbons. 4,251,484, Cl. 422-145.000.
Davies, Elmer T. Humane animal trap. 4,250,653, Cl. 43-87.000.
Davis, William; and Whiteside, Ross C., Jr., to Dow Chemical Company, The. Process for preparing resin impregnated substrates for use in preparing electrical laminates. 4,251,594, Cl. 428-413.000.
Davison, Joseph A.; Hall, Graham W.; Hodges, Newton J.; and Price, David W., to Coal Industry (Patents) Limited. Sealant material. 4,251,413, Cl. 260-29.6MM.
Dayton Sure Grip & Shore Company, The: *See—*
Holtvogt, Joseph D., 4,251,047, Cl. 249-205.000.
de la Burde, Roger Z.: *See—*
Utsch, Francis V.; de la Burde, Roger Z.; and Aument, Patrick E., 4,250,898, Cl. 131-140.00P.
Debord, Pierre; and Marijon, Jean-Louis, to International Business Machines Corporation. Dynamic zero offset compensating circuit for A/D converter. 4,251,803, Cl. 340-347.0CC.
De Bruyne, Roger: *See—*
Claes, Jozef; and De Bruyne, Roger, 4,251,238, Cl. 55-97.000.
Decombe, Robert: *See—*
Mehl, Wolfgang; Hendriks, Dieter; and Decombe, Robert, 4,251,611, Cl. 430-42.000.
Deere & Company: *See—*
Fox, Robert E., 4,250,968, Cl. 172-60.000.
Glaser, Fritz, 4,250,897, Cl. 130-27.00T.
Salley, Gordon L.; and Swales, Barton L., 4,251,014, Cl. 222-615.000.
Wagner, Joseph F.; and Westemeier, Donald E., 4,250,740, Cl. 73-40.700.
Deffeyes, Robert J.; and Armstrong, Harris W., to Graham Magnetics Incorporated. Low-viscosity, high-silver, paint. 4,251,275, Cl. 106-1.140.
de Greef, Jan L.: *See—*
Tan, King-Han; and de Greef, Jan L., 4,251,642, Cl. 525-66.000.
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., to Environmental Elements Corporation. Variable volume control assembly. 4,251,027, Cl. 236-49.000.
Deigmuller, Gunter; Munk, Andreas; Rohe, Bruno; and Strunk, Manfred, to Dynamit Nobel Aktiengesellschaft. Process for the production of compacted explosive charges. 4,250,792, Cl. 86-1.00R.
Deimel, Gerhard; Schmidt, Paul; and Sturm, Harald, to Jagenberg Werke Aktiengesellschaft. Method and apparatus for making a fillet-seam closure on a folding carton, particularly a peaked-top carton. 4,251,303, Cl. 156-73.100.
Delfine, Frank: *See—*
Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, 4,251,798, Cl. 340-146.3SY.
Deli, Peter. Combined article of furniture and step-ladder arrangement. 4,250,977, Cl. 182-33.600.
Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., to General Foods Corporation. Cream-containing frozen whipped topping composition. 4,251,560, Cl. 426-565.000.
de Montigny, Armand; and Toepsch, Hans, to Bayer Aktiengesellschaft. Production of non-stick coatings. 4,251,596, Cl. 428-447.000.
Demoures, Bernard: *See—*
Le Coent, Jean-Louis; and Demoures, Bernard, 4,251,379, Cl. 252-33.000.
Denka Chemical Corporation: *See—*
Barone, Bruno J., 4,251,390, Cl. 252-435.000.
Denshi Kabushiki Kaisha: *See—*
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Densicon Associates: *See—*
Kopf, Rowland J., 4,250,742, Cl. 73-82.000.
Dentsply Research & Development Corp.: *See—*
Plowman, Richard E.; and Spencer, Bruce J., 4,251,211, Cl. 433-98.000.
Dermy, Rene M.: *See—*
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.
Deschamps, Andre; Franckowiak, Sigismond; and Sugier, Andre, to Institut Francais du Petrole. Process for purifying a hydrogen sulfide containing gas. 4,251,495, Cl. 423-230.000.
Designs for Vision, Inc.: *See—*
Feinbloom, Richard E., 4,251,128, Cl. 350-91.000.
Detjen, Robert K., to McDonough Manufacturing Company. Sawmill log handling method. 4,250,937, Cl. 144-312.000.
Deutsch, Hans. Stereophonic sound reproducing system. 4,251,687, Cl. 179-1.0GA.
DeVlieg Machine Company: *See—*
Jerue, Richard A.; and Ortlieb, Robert M., 4,250,775, Cl. 82-1.00C.
Dewiggins, Richard J.: *See—*
Roccaforte, Harry I.; and Dewiggins, Richard J., 4,250,993, Cl. 206-216.000.
Diamond Shamrock Corporation: *See—*
Gullo, James M.; Heilman, William P.; Wayner, Robert J.; and Moser, Robert E., 4,251,527, Cl. 424-249.000.
Di Crescenzo, Claude: *See—*
Hirsch, Jean-Raphael; and Di Crescenzo, Claude, 4,250,671, Cl. 52-167.000.
Diebold, James L.: *See—*
Freed, Meier E.; and Diebold, James L., 4,251,444, Cl. 260-244.400.
Diehl, Robert E.: *See—*
Lutz, Albert W.; and Diehl, Robert E., 4,251,264, Cl. 71-105.000.
Diersing, Raymond A.; Hackenbroch, Wilhelm T.; Schweikle, George E.; and Stanback, Harris I., to Square D Company. Panelboard assembly. 4,251,851, Cl. 361-363.000.
Diesel Kiki Company, Ltd.: *See—*
Ohtani, Masami, 4,250,956, Cl. 165-36.000.
Diessner, Armin, to Siemens Aktiengesellschaft. Compressed gas insulated high voltage line. 4,251,681, Cl. 174-28.000.
Diggens, Albert A., to Orion Research Incorporated. Method of adjusting pH. 4,251,218, Cl. 23-230.00R.
Dikow, Hermann: *See—*
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.
Dinges, Karl: *See—*
Humme, Gert; Ott, Karl-Heinz; Hardt, Dietrich; and Dinges, Karl, 4,251,645, Cl. 525-75.000.
Dipl.-Ing. H. Horstmann GmbH: *See—*
Horstmann, Hendrik, 4,251,844, Cl. 361-1.000.
Diprose, Kenneth V.; and Forbes, Arthur S., to ISS Clorius Limited. Heat meters. 4,250,747, Cl. 73-193.00R.
Director-General Seiichi Ishizaka of the Agency of Industrial Science and Technology: *See—*
Ogura, Tsugitoshi; Hiraki, Akio; and Kajimoto, Hikokusu, 4,251,345, Cl. 208-8.0LE.
Dittmar, Wilfried: *See—*
Franz, Reinhard; and Dittmar, Wilfried, 4,250,788, Cl. 84-1.010.
Divald, Andras: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Dixon, Richard D.: *See—*
Ruhl, John H.; and Dixon, Richard D., 4,250,733, Cl. 72-391.000.
Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG: *See—*
Ewert, Horst; and Schael, Wilfried, 4,251,769, Cl. 324-96.000.
Dr. Johannes Heidenhain GmbH: *See—*
Dangschat, Holmer, 4,250,763, Cl. 74-208.000.
Dodt, William C.; and Lutter, Edward P., to International Business Machines Corporation. Checking programmed controller operation. 4,251,885, Cl. 371-60.000.
Dogadko, Peter; and Jereb, Richard F., to Outboard Marine Corporation. Electronic accelerator pump timing control. 4,251,848, Cl. 361-196.000.
Doksansky, Vladimir: *See—*
Hubalek, Jan; Doksansky, Vladimir; and Michal, Jan, 4,251,099, Cl. 294-75.000.
Dolesh, Robert P.: *See—*
Cerny, Rodney A.; and Dolesh, Robert P., 4,251,490, Cl. 423-179.000.
Dolhay, Balazs; and Barczy, Zsolt, to Chinoin Gyogyszer es Vegyeszett Termekek Gyara. Apparatus for the removal of contents of body cavities by suction and/or for sampling during an operation. 4,250,892, Cl. 128-758.000.
Dolle, Lucien, to Commissariat a l'Energie Atomique. Magnetic filter with permanent magnets. 4,251,372, Cl. 210-222.000.
Dolzhenkov, Boris S.: *See—*
Safian, Matvei M.; Babich, Eduard A.; Dolzhenkov, Boris S.; and Esaulenko, Valery D., 4,250,726, Cl. 72-38.000.
Dominion Pharmacal, Inc.: *See—*
Olson, B. Newell, 4,251,507, Cl. 424-49.000.
Donachiue, James P. Humidifier pad. 4,251,583, Cl. 428-137.000.
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, to Farmitalia Carlo Erba S.p.A. 3,4-Dihydro-quinazoline derivatives. 4,251,531, Cl. 424-251.000.
Dorina Nahmaschinen GmbH: *See—*
Meier, Gunter; and Kessler, Rolf, 4,250,824, Cl. 112-269.100.
Dossett, Richard A.: *See—*
Grimm, Bernard J.; and Dossett, Richard A., 4,250,719, Cl. 62-382.000.
Dow Chemical Company, The: *See—*
Bargeron, Kim G.; Hormel, Thad S.; Winegardner, David K.; and Lovelace, Bruce G., 4,251,459, Cl. 564-215.000.
Davis, William; and Whiteside, Ross C., Jr., 4,251,594, Cl. 428-413.000.
Smith, Vernon J., 4,251,006, Cl. 220-22.000.

Dowa Engineering Co. Ltd.: *See*—
Tezuka, Kazumasa; Hisano, Seiichi; Sasaki, Hyoichi; and Watanabe, Ikuo, 4,251,497, Cl. 423-242.000.

Dowa Mining Co. Ltd.: *See*—
Tezuka, Kazumasa; Hisano, Seiichi; Sasaki, Hyoichi; and Watanabe, Ikuo, 4,251,497, Cl. 423-242.000.

Doyle, Kenneth R. Fire plow. 4,250,869, Cl. 126-271.20R.

Doyle, Richard H.; and Geist, Bernard W., to Duo-Fast Corporation. Fastener driving tool. 4,251,017, Cl. 227-8.000.

Draber, Wilfried: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, 4,251,540, Cl. 424-273.00R.

Dravo Corporation: *See*—
Pobuda, Erhard; and Kilian, Alois, 4,251,062, Cl. 266-178.000.

Dreamland Electrical Appliances Limited: *See*—
Cole, Graham M., 4,251,717, Cl. 219-497.000.
Cole, Graham M., 4,251,718, Cl. 219-501.000.

Dreher, Heinz W.; and Persson, Bo S. O., to Dreher, Heinz Walter. Clutch mechanism. 4,250,942, Cl. 160-297.000.

Dreher, Heinz Walter: *See*—
Dreher, Heinz W.; and Persson, Bo S. O., 4,250,942, Cl. 160-297.000.

Drobny, Vladimir F.: *See*—
Miner, Carla J.; Baraff, David R.; Serinken, Nur M.; Streater, Richard W.; and Drobny, Vladimir F., 4,251,136, Cl. 350-334.000.

Drott, Edward R.; Christenson, John C.; and Rathke, Ralph E., to Loed Corporation. Implement coupling apparatus for boom-type vehicle. 4,251,181, Cl. 414-723.000.

Drummond Scientific Co.: *See*—
Kenney, James W., 4,250,755, Cl. 73-425.600.

Dry, Leonard J.; Kleynjan, Cornelius; and Beukes, Quintin J., to Sasol One (Proprietary) Limited. Process for coal liquefaction. 4,251,346, Cl. 208-10.000.

Dufrit Kartoffel Verarbeitung Kroenig GmbH & Co. KG: *See*—
Kroenig, Hans E. K., 4,251,555, Cl. 426-231.000.

Dugan, Charles; and Dugan, Timothy, to Farm Fresh Shrimp Corporation. Apparatus and method for rearing shrimp. 4,250,835, Cl. 119-2.000.

Dugan, Timothy: *See*—
Dugan, Charles; and Dugan, Timothy, 4,250,835, Cl. 119-2.000.

Dumesnil, Maurice E.; and Schreier, Ulrich, to Technology Glass Corporation. Low temperature sealing glasses. 4,251,595, Cl. 428-426.000.

Dunn, Robert E.: *See*—
Bourgraf, Elroy E.; Dunn, Robert E.; and Self, Kenneth R., 4,251,178, Cl. 414-343.000.

Duo-Fast Corporation: *See*—
Doyle, Richard H.; and Geist, Bernard W., 4,251,017, Cl. 227-8.000.

Dupaylite Developments Limited: *See*—
Clegg, Frederick W., 4,250,684, Cl. 53-157.000.

Du Pont de Nemours, E. I., and Company: *See*—
Aldrich Paul E.; and Berezin, Gilbert H., 4,251,534, Cl. 424-258.000.
Aldrich, Paul E.; and Berezin, Gilbert H., 4,251,659, Cl. 546-102.000.
Calamur, Narasimhan, 4,251,627, Cl. 430-569.000.
Cherkofsky, Saul C., 4,251,535, Cl. 424-263.000.
Goetemann, Gerald B.; and Rackley, Robert L., 4,251,588, Cl. 428-224.000.
Heiberger, Philip, 4,251,406, Cl. 260-22.00R.
Hertler, Walter R., 4,251,421, Cl. 260-31.20N.
Hertler, Walter R., 4,251,422, Cl. 260-31.20N.
McCartin, Peter J.; and Nebe, William J., 4,251,618, Cl. 430-270.000.
McClure, George R.; and Victorius, Claus, 4,251,426, Cl. 260-37.0EP.
Nazarenko, Nicholas, 4,251,468, Cl. 568-1.000.
Needes, Christopher R. S., 4,251,344, Cl. 204-290.00R.
Pagilagan, Rolando U., 4,251,424, Cl. 260-30.80R.
Rees, Richard W., 4,251,403, Cl. 260-17.4SG.
Robinson, Ivan M.; and Pechhold, Engelbert, 4,251,654, Cl. 528-417.000.
Scheiber, David H., 4,251,397, Cl. 252-521.000.
Schleinitz, Henry M., 4,251,377, Cl. 210-510.000.
Simms, John A., 4,251,404, Cl. 260-15.000.

du Quesne, Francis. Radially adjustable support and clamp for motorcycle wheel rim. 4,250,936, Cl. 157-17.000.

Durand, Alfred, to Societe A.R.A.F. Cutting tool insert for precision radial machining. 4,251,172, Cl. 408-228.000.

Dutton, Daniel R.: *See*—
Login, Robert B.; and Dutton, Daniel R., 4,251,402, Cl. 260-9.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Deigmuller, Gunter; Munk, Andreas; Rohe, Bruno; and Strunk, Manfred, 4,250,792, Cl. 86-1.00R.
Vahlensieck, Hans-Joachim; Fischer, Peter; and Blumcke, Alfred, 4,251,282, Cl. 106-289.000.

Dzus Fastener Co., Inc.: *See*—
Gunther, Conrad J., 4,250,600, Cl. 24-221.00A.

E-Cel Corporation: *See*—
Zwan, Bryan J., 4,251,679, Cl. 136-244.000.

E M I Limited: *See*—
Lodge, James A., 4,250,761, Cl. 74-84.00R.

Earl, Hugh E.; and Robbins, Michael. Pellet for an air, gas or spring gun. 4,251,079, Cl. 273-428.000.

Eastern Molding International, Inc.: *See*—
Pappalardo, P. Paul; Conway, Carle C.; and Rodon, Frank, 4,250,698, Cl. 56-202.000.

Eastfield Corporation: *See*—
Rich, Michael; and Eldracher, Konrad, 4,251,033, Cl. 239-338.000.

Eastman Kodak Company: *See*—
Gysling, Henry J., 4,251,623, Cl. 430-353.000.
Irick, Gether, Jr.; and Kelly, Charles A., 4,251,433, Cl. 260-45.8NT.
Nonnemacher, James R.; Regan, Michael T.; and Webster, Frank G., 4,251,609, Cl. 430-9.000.
Russel, Matthew J., 4,251,154, Cl. 355-4.000.

Ebert, Hans; Kerber, Hans; and Queck, Robert, to Hoechst Aktiengesellschaft. Operation of a lead-in-device receiving a conductor passed through the cover of an electrical precipitation apparatus. 4,251,682, Cl. 174-31.500.

Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, to BASF Aktiengesellschaft. Manufacture of nylon by adding liquid diamine to aqueous polyamide forming salt solution. 4,251,653, Cl. 528-335.000.

Ecker, Mario E.; and Olson, Leonard T., to International Business Machines Corporation. Integrated circuit package. 4,251,852, Cl. 361-386.000.

Efimov, Viktor A.: *See*—
Brovman, Mikhail Y.; Marchenko, Ivan K.; Kozy, Nikolai M.; Efimov, Viktor A.; and Yakobshe, Richard Y., 4,250,949, Cl. 164-425.000.

Eichenauer, Larry L. Travel crib. 4,250,580, Cl. 5-93.00R.

Eisenrith, Karl-Hein: *See*—
Aulich, Hubert; and Eisenrith, Karl-Hein, 4,251,250, Cl. 65-2.000.

Eisses, Reinhart C. W.: *See*—
Compen, Johannes M. A. A.; Eisses, Reinhart C. W.; Panis, Constantius J. W.; and Paridaens, Cornelius J. H., 4,251,749, Cl. 313-479.000.

Ekdahl, Wendell G., to Johns-Manville Corporation. Method of producing alumina-containing fiber and composition therefor. 4,251,279, Cl. 106-50.000.

Elaine Powers Nutrition Company, Inc.: *See*—
Proctor, Richard I., 4,251,550, Cl. 426-72.000.

Eldracher, Konrad: *See*—
Rich, Michael; and Eldracher, Konrad, 4,251,033, Cl. 239-338.000.

Elek, Sandor: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.

Elekes, Istvan: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.

Elektrothermit GmbH: *See*—
Moring, Wilfried, 4,250,944, Cl. 164-54.000.

Eli Lilly and Company: *See*—
Gesellchen, Paul D.; and Smiley, David L., 4,251,439, Cl. 260-112.50R.

Ellenburg, Howard. Foldable wrist braced slingshot. 4,250,861, Cl. 124-20.00R.

Ellwanger, Richard E.: *See*—
Chamberlain, Ralph J.; and Ellwanger, Richard E., 4,251,363, Cl. 210-727.000.

Elsworth, Robert M., to Elsworth, Robert M. Apparatus for filling caulking tubes with improved manifold for feeding plunger caps. 4,250,685, Cl. 53-282.000.

Emanual, Everett. Telescoping closet. 4,251,124, Cl. 312-4.000.

Emmons, William D.; and Feely, Wayne E., to Rohm and Haas Company. Coating, impregnating and adhesive compositions curable at ambient temperature, and methods of using them. 4,251,597, Cl. 428-500.000.

Emrick, Donald G. Vacuum cleaner. 4,250,592, Cl. 15-320.000.

Emsperger, Werner: *See*—
Bruckner, Hermann; and Emsperger, Werner, 4,250,704, Cl. 60-39.120.

Endo, Akira: *See*—
Kimura, Katsuhiro; Endo, Akira; Sekine, Kenji; Tanigami, Takahiko; and Kaneko, Yoichi, 4,251,817, Cl. 343-5.0DD.

Endo, Koichi: *See*—
Handa, Takashi; and Endo, Koichi, 4,251,225, Cl. 23-232.00E.

Endress u. Hauser GmbH u. Co.: *See*—
Sartorius, Wilfried; and Stock, Don J. R., 4,251,777, Cl. 328-155.000.

Energy Development Associates, Inc.: *See*—
Hart, Thomas G., 4,251,568, Cl. 429-49.000.

Enertec: *See*—
Souillard, Michel, 4,251,766, Cl. 324-52.000.

Engel, Dusan J., to UOP Inc. Preparation of diphenylmethane. 4,251,675, Cl. 585-422.000.

Engelsmann, Dieter: *See*—
Stemme, Otto; Engelsmann, Dieter; and Nicko, Reinhard, 4,251,148, Cl. 354-173.000.

England, Evelyn F. Stabilizing colored photographic print against fading and staining. 4,251,624, Cl. 430-372.000.

English Clays Lovering Pochin & Co., Ltd.: *See*—
Bowman, Henry T. A., 4,251,351, Cl. 209-5.000.

English, Irene F.: *See*—
English, Roy L.; English, Irene F.; and English, Roy V., 4,250,665, Cl. 47-81.000.

English, Roy L.; English, Irene F.; and English, Roy V. Planter system. 4,250,665, Cl. 47-81.000.
English, Roy V.: *See*—
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Entoleter, Inc.: *See*—
Corr, Ernst F.; and Munns, Robert J., 4,251,034, Cl. 241-14.000.
Entrepise d'Equipments Mechanique set Hydrauliques E.M.H.: *See*—
Tuson, Samuel; and Ghilardi, Jean-Pierre, 4,250,918, Cl. 137-580.000.
Environmental Elements Corporation: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,251,027, Cl. 236-49.000.
Eppley, Ricky L., to NCR Corporation. Method and apparatus for plotting graphics. 4,251,816, Cl. 340-747.000.
ERCO Industries Limited: *See*—
Cowley, Gerald; and Swindells, Richard, 4,251,224, Cl. 23-230.00A.
Forster, James H., 4,251,502, Cl. 423-478.000.
Swindells, Richard; and Cowley, Gerald, 4,251,503, Cl. 423-478.000.
Erickson, Doris, executor: *See*—
Rausch, Maurice K.; Erickson, Henry, deceased; Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., 4,251,347, Cl. 208-57.000.
Erickson, Henry: *See*—
Johnson, Marvin F. L.; and Erickson, Henry, 4,251,350, Cl. 208-216.00R.
Erickson, Henry, deceased: *See*—
Rausch, Maurice K.; Erickson, Henry, deceased; Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., 4,251,347, Cl. 208-57.000.
Eriksen, Joern B., to Tektronix, Inc. Image-forming system for obscuring poster lines. 4,251,835, Cl. 358-244.000.
Ermilov, Nikolai P.: *See*—
Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,251,113, Cl. 299-69.000.
Esaulenko, Valery D.: *See*—
Safian, Matvei M.; Babich, Eduard A.; Dolzhenkov, Boris S.; and Esaulenko, Valery D., 4,250,726, Cl. 72-38.000.
Eschke, Bernd: *See*—
Bragas, Peter; and Eschke, Bernd, 4,251,797, Cl. 340-32.000.
Escott, Robert M.: *See*—
Beggs, Donald; and Escott, Robert M., 4,251,267, Cl. 75-35.000.
Essilor International, Cie Generald d'Optique: *See*—
Blandin, Denis, 4,251,474, Cl. 264-1.100.
Estanislao, Antonio J. Means for high pressure production of diamonds. 4,251,488, Cl. 422-242.000.
Etablissement Public de Diffusion dit "Telediffusion de France": *See*—
Moreau, Jean, 4,251,836, Cl. 358-264.000.
Etablissements Wanson, Construction de Materiel Thermique: *See*—
Wanson, Leon J., 4,251,324, Cl. 202-174.000.
Etudes Petrolieres Marines: *See*—
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.
Evans, John M., to Beecham Group Limited. Hypotensive 3,4-dihydro-2,2-dimethyl-4-amino-2H-benzo[b]pyran-3-ols. 4,251,537, Cl. 424-267.000.
Evart, Garri V.: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.
Evenstad, Donovan C., to Wheelabrator-Frye Inc. Jet pulse bag type collector. 4,251,244, Cl. 55-302.000.
Evva Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co.: *See*—
Prunbauer, Kurt, 4,250,725, Cl. 70-276.000.
Ewert, Horst; and Schael, Wilfried, to Dr. Eduard Fresenius Chemisch-pharmazeutische Industrie KG, Apparatebau KG. Indicator and limit value alarm device. 4,251,769, Cl. 324-96.000.
Exxon Production Research Company: *See*—
Heilhecker, Joe K.; Robinson, Leon H., Jr.; and Peters, Beldon A., 4,250,974, Cl. 175-48.000.
Exxon Research and Engineering Co.: *See*—
Bartz, Kenneth W., 4,250,996, Cl. 206-343.000.
Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, 4,251,232, Cl. 44-63.000.
Carter, James L.; and Barnett, Allan E., 4,251,394, Cl. 252-452.000.
Carter, James L.; and Barnett, Allan E., 4,251,672, Cl. 568-814.000.
Longo, John M.; and Cull, Neville L., 4,251,496, Cl. 423-239.00A.
Mauldin, Charles H.; and Baird, William C., Jr., 4,251,391, Cl. 252-439.000.
Mauldin, Charles H.; and Baird, William C., Jr., 4,251,392, Cl. 252-439.000.
Moustakas, Theodore D.; Friedman, Robert A.; and Wronski, Christopher R., 4,251,289, Cl. 136-255.000.
Say, Geoffrey R., 4,251,494, Cl. 423-228.000.
Smith, William S., Jr., 4,251,646, Cl. 525-88.000.
Fadeev, Petr Y.: *See*—
Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,251,113, Cl. 299-69.000.
Fadeev, Vladimir Y.: *See*—
Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,251,113, Cl. 299-69.000.
Fahy, Michael J.: *See*—
Pratt, George W.; Chapple, Thomas W.; and Fahy, Michael J., 4,251,630, Cl. 435-98.000.
Fairchild Camera and Instrument Corporation: *See*—
Caldwell, Robert E., 4,251,300, Cl. 148-175.000.
Foote, Louis L., 4,251,317, Cl. 156-639.000.
Farber, Heinrich: *See*—
Bauer, Walter; Krobel, Heinz; and Farber, Heinrich, 4,251,150, Cl. 354-281.000.
Farm Fresh Shrimp Corporation: *See*—
Dugan, Charles; and Dugan, Timothy, 4,250,835, Cl. 119-2.000.
Farmitalia Carlo Erba S.p.A.: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, 4,251,513, Cl. 424-180.000.
Farnam Livestock Equipment and Insecticides, Inc.: *See*—
Ott, Jerry E., 4,250,838, Cl. 119-106.000.
Fattinger, Volker; and Schneider, Jurg, to Ciba-Geigy Corporation. Process for purifying the off-gases from industrial furnaces, especially from waste incineration plants. 4,251,236, Cl. 55-84.000.
Favrot, Paul, to Constructions de Clichy. Device for supporting a crankshaft having four crankpins on a grinding machine. 4,250,667, Cl. 51-237.0CS.
Federal Paper Board Company, Inc.: *See*—
Manizza, Guelfo A.; and Holmes, George S., 4,250,991, Cl. 206-158.000.
Feely, Wayne E.: *See*—
Emmons, William D.; and Feely, Wayne E., 4,251,597, Cl. 428-500.000.
Feinberg, Emanuel, to Paragon Resources, Inc. Automatic vent damper. 4,251,024, Cl. 236-1.00G.
Feinbloom, Richard E., to Designs for Vision, Inc. Apparatus for increasing the input light intensity to a microscope. 4,251,128, Cl. 350-91.000.
Feist, Artus. Panels for cladding floors, walls and ceilings of rooms. 4,250,674, Cl. 52-220.000.
Felder, Louis; Kirchmayr, Rudolf; and Schmidt, Andreas, to Ciba-Geigy Corporation. Photoinitiators for UV-curable systems. 4,251,341, Cl. 204-159.240.
Feldman, Isai N.: *See*—
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.
Feldman, Nicholas: *See*—
Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, 4,251,232, Cl. 44-63.000.
Feller, Otto; Kuhl, Manfred; and Skrobek, Alois, to Goetze AG. Apparatus for making out-of-round workpieces. 4,250,779, Cl. 82-18.000.
Fellgett, Peter B., to National Research Development Corporation. Reproduction of sound. 4,251,685, Cl. 179-1.0GQ.
Fencl, Susan D.: *See*—
Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., 4,251,560, Cl. 426-565.000.
Feo, Ernest M.: *See*—
Klimek, John J.; Tesch, Charles L.; Feo, Ernest M.; and Lesky, Ronald W., 4,250,616, Cl. 29-830.000.
Fernald, Maurice E.: *See*—
Brown, Charles D.; Plummer, Cole N.; Tripp, Roger N.; and Fernald, Maurice E., 4,251,190, Cl. 417-68.000.
Ferno-Washington, Inc.: *See*—
Bourgraf, Elroy E.; Dunn, Robert E.; and Self, Kenneth R., 4,251,178, Cl. 414-343.000.
Fernsler, Ronald E.; and Willis, Donald H., to RCA Corporation. Television horizontal AFPC with phase detector driven at twice the horizontal frequency. 4,251,833, Cl. 358-148.000.
Ferrari, Lorenzo: *See*—
Bruzzese, Tiberio; Ferrari, Lorenzo; and Notarianni, Aurelio F., 4,251,520, Cl. 424-180.000.
Ferree, William I., Jr.; and Nguyen, Giao V., to Liquid Paper Corporation. Thermally activated ink and transfer method. 4,251,276, Cl. 106-27.000.
Ferrentino, Antonio, to Industrie Pirelli Societa per Azioni. Flow regulator. 4,250,914, Cl. 137-501.000.
Ferrini, Gino P., to B. F. Goodrich Company, The. Reducing residual acrylonitrile in water dispersions of acrylonitrile polymers with amine. 4,251,412, Cl. 260-29.6PT.
Feuchter, Franz-Peter; Roller, Erling; and Giertz, Klaus-Walter, to Fried. Krupp Gesellschaft mit beschrankter Haftung. Device for handling continuously vertically cast rectangular strands, especially of aluminum and aluminum alloys. 4,250,948, Cl. 164-269.000.
Feyen, Peter; Preiss, Michael; and Metzger, Karl G., to Bayer Aktiengesellschaft. β-Lactam antibiotics. 4,251,524, Cl. 424-226.000.
Fiat Auto S.p.A.: *See*—
Cavallino, Francesco; Martinez, Pasquale; Vaccaneo, Stefano; and Allione, Michele, 4,250,707, Cl. 60-293.000.
Cavallino, Francesco; Martinez, Pasquale; Schiavuzzi, Roberto; and Allione, Michele, 4,250,860, Cl. 123-587.000.
Fickers, Gisela, to Asten Group, Inc. Low bulk, pin-type seam for use in paper making equipment fabrics, such as dryer felts. 4,250,822, Cl. 112-262.100.

Ficner, Stanley A.; Klanica, Andrew J.; and Korenowski, Theodore F., to Olin Corporation. Process for making sodium tripolyphosphate from wet process phosphoric acid. 4,251,491, Cl. 423-185.000.

Fieldcrest Mills, Inc.: *See—*
Ziegler, George E., Jr.; and Hutcherson, Henry S., 4,251,312, Cl. 156-465.000.

Filipiev, Oleg V.: *See—*
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D., 4,250,840, Cl. 122-6.00A.

Filippov, Iosif F.: *See—*
Vinokurov, Alexandr A.; Zhukovsky, Alexandr V.; Zotov, Igor L.; Popov, Jury S.; Filippov, Iosif F.; and Ponedelko, Vladimir N., 4,250,744, Cl. 73-118.000.

Filka, Karel: *See—*
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,251,634, Cl. 521-84.000.

Fima, Raoul G. Intermittently illuminated fishing lure. 4,250,650, Cl. 43-17.600.

Findeisen, Bernd: *See—*
Schwander, Dieter; Strell, Hermann; and Findeisen, Bernd, 4,251,471, Cl. 261-34.00A.

Findeisen, Kurt: *See—*
Wagner, Kuno; Niggemann, Johanness; Findeisen, Kurt; and Scheinpflug, Hans, 4,251,255, Cl. 71-27.000.

Fineberg, Herman: *See—*
Frainier, Leo J.; and Fineberg, Herman, 4,251,396, Cl. 252-467.000.

Firmenich SA: *See—*
Sundt, Erling; Aschiero, Roland; and Schenk, Walter, 4,251,398, Cl. 252-522.00R.

Fischer, Peter: *See—*
Vahlensieck, Hans-Joachim; Fischer, Peter; and Blumcke, Alfred, 4,251,282, Cl. 106-289.000.

Fischer & Porter Company: *See—*
Shaffer, Robert G., 4,251,869, Cl. 364-484.000.

Fischli, Albert E.; and Szente, Andre, to Hoffmann-La Roche Inc. Benzodiazepine derivatives. 4,251,443, Cl. 260-239.30D.

Fisher, Alexander B.: *See—*
Vassie, Craig D.; and Fisher, Alexander B., 4,250,746, Cl. 73-178.00T.

Flango, William E., Jr.: *See—*
Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., 4,251,560, Cl. 426-565.000.

Flavell, John: *See—*
Betts, Max W.; and Flavell, John, 4,250,722, Cl. 66-146.000.

Fleury, Guy J.: *See—*
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.

Floyd, John M., to Commonwealth Scientific and Industrial Research Organization. Submerged injection of gas into liquid-pyrometallurgical bath. 4,251,271, Cl. 75-73.000.

Flugge, Ruprecht: *See—*
Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, 4,251,162, Cl. 400-613.100.

Flynn, John J.: *See—*
Cushman, Robert H.; Ciavattoni, Anthony; Flynn, John J.; and Schubert, Thomas J., 4,251,730, Cl. 250-439.00P.

Flynn, Richard T.: *See—*
Kindell, Jerry L.; and Flynn, Richard T., 4,251,864, Cl. 364-200.000.

FMC Corporation: *See—*
Hensler, Paul L.; Church, Delmar F.; and Beger, Robert W., 4,251,498, Cl. 423-315.000.

Focke & Co.: *See—*
Focke, Heinz, 4,250,994, Cl. 206-273.000.
Focke, Heinz, 4,251,022, Cl. 229-44.0CB.

Focke, Heinz, to Focke & Co. Cigarette pack laminate having raised sealing ridges. 4,250,994, Cl. 206-273.000.

Focke, Heinz, to Focke & Co. Pack, in particular cuboid cigarette pack. 4,251,022, Cl. 229-44.0CB.

Fogerty, Robert W., Jr. Ride assembly for simulating travel. 4,251,140, Cl. 352-132.000.

Fonderie & Ateliers des Sablons: *See—*
Godat, Jean, 4,250,749, Cl. 73-290.00R.

Foote, Louis L., to Fairchild Camera and Instrument Corporation. Method of preventing etch masking during wafer etching. 4,251,317, Cl. 156-639.000.

Forbes, Arthur S.: *See—*
Diprose, Kenneth V.; and Forbes, Arthur S., 4,250,747, Cl. 73-193.00R.

Ford Aerospace & Communications Corp.: *See—*
Vickland, Jack M., 4,251,819, Cl. 343-882.000.

Ford, James A.; and Haarer, Steven R., to Kirsch Company. Cord guide and support therefor. 4,250,597, Cl. 24-132.00R.

Ford Motor Company: *See—*
Martinec, Richard C.; Berry, James I.; and Stokes, Paul D., 4,250,750, Cl. 73-308.000.

Foreman, Robert W.; and Meszaros, Anthony G., to Park Chemical Company. Method for restoring molecular weight distribution of a polymeric quenchant. 4,251,292, Cl. 148-18.000.

Forox Corporation: *See—*
Thompson, Edwin R., 4,250,641, Cl. 40-158.00B.

Forrest, Arthur L.: *See—*
Orr, Newell H.; and Forrest, Arthur L., 4,251,337, Cl. 204-105.00R.

Forsen, John E. S., to Ikea Svenska AB. Arrangement for releasable fastening of a peg in a hole. 4,251,165, Cl. 403-263.000.

Forster, James H., to ERCO Industries Limited. Modular chlorine dioxide generation systems. 4,251,502, Cl. 423-478.000.

Forsyth, Bruce A.: *See—*
McGarry, Errol-James; Forsyth, Bruce A.; and Wilshire, Colin, 4,251,546, Cl. 424-347.000.

Forsyth Dental Infirmary for Children: *See—*
Lees, Sidney, 4,250,895, Cl. 128-776.000.

Fortini, Edward C.: *See—*
Marino, Jerry C.; and Fortini, Edward C., 4,251,095, Cl. 292-54.000.

Fortmann, Wilhelm: *See—*
Schoppa, Claus; Fortmann, Wilhelm; and Stei, Armin, 4,251,581, Cl. 428-95.000.

Fortun, Wayne M.: *See—*
Oberg, Gary; Wocken, Gerald F.; Huntwork, Daniel E.; and Fortun, Wayne M., 4,251,318, Cl. 156-645.000.

Foster, Karl; Thornburg, Donald R.; and Rauch, Gary C., to Westinghouse Electric Corp. Method of preparing an oriented low alloy iron from an ingot alloy having a high initial sulfur content. 4,251,295, Cl. 148-120.000.

Foster, Karl: *See—*
Thornburg, Donald R.; Rauch, Gary C.; and Foster, Karl, 4,251,296, Cl. 148-120.000.

Foster Wheeler Energy Corporation: *See—*
Daman, Ernest L., 4,250,839, Cl. 122-4.00D.

Fougea, Bernard, to Coignet S.A. Apparatus for determining the reeving of a pulley system. 4,251,059, Cl. 254-338.000.

Fournet, Gaston; Gueroult, Alain; and Sauterey, Daniel, to Societe d'Assistance Technique pour Produits Nestle S.A. Process for the production of bases for tarts and pizzas. 4,251,549, Cl. 426-19.000.

Fowler, Raymond L.; Leach, David W.; and Sloan, Lowell T., to International Business Machines Corporation. Centrifugal clamp on a high speed print drum. 4,250,810, Cl. 101-410.000.

Fox, Robert E., to Deere & Company. Minimum wrap bi-rotational cutter wheel for a tillage implement. 4,250,968, Cl. 172-60.000.

Frainier, Leo J.; and Fineberg, Herman, to Ashland Oil, Inc. Copper chromite catalyst for preparation of furfuryl alcohol from furfural. 4,251,396, Cl. 252-467.000.

Fraley, Phillip E.; and Lapinsky, Ronald L., to Bell Telephone Laboratories, Incorporated. Selective metal etching of two gold alloys on common surface for semiconductor contacts. 4,251,621, Cl. 430-312.000.

Frame, Scott W.: *See—*
Angevine, John S.; Frame, Scott W.; and Yacura, Stephen B., 4,250,816, Cl. 110-101.0CF.

Franckowiak, Sigismond: *See—*
Deschamps, Andre; Franckowiak, Sigismond; and Sugier, Andre, 4,251,495, Cl. 423-230.000.

Frank, Earl E., to Abex Corporation. Railway double tongue switch. 4,251,042, Cl. 246-443.000.

Franke, Albrecht: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.

Franklin, Reginald A., to Crawford Collets Limited. Collets. 4,251,084, Cl. 279-1.0ME.

Franssell, Dean E.: *See—*
VanHulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,251,551, Cl. 426-94.000.

Franz, Reinhard; and Dittmar, Wilfried, to WERSI-electronic GmbH & Co. KG. Register arrangement for electronic musical instruments. 4,250,788, Cl. 84-1.010.

Frazier, Albert A., to Aladdin Industries, Incorporated. Method for making vacuum insulated container. 4,251,252, Cl. 65-34.000.

Freeauf, Robert F. Dwelling structure. 4,250,669, Cl. 52-79.800.

Freed, Lawrence H.: *See—*
Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., 4,251,560, Cl. 426-565.000.

Freed, Meier E.; and Diebold, James L., to American Home Products Corporation. Thiazepino-[4,3-b]-isoquinoline-1,5-dione derivatives and precursors. 4,251,444, Cl. 260-244.400.

Freeman, Luther: *See—*
Colwell, Gary R.; and Freeman, Luther, 4,251,359, Cl. 210-605.000.

Frei, Charles; and Pfau, Jean, to Ateliers des Charmilles, S.A. Electrode tool for EDM and method for utilizing such electrode tool. 4,251,706, Cl. 219-69.00D.

Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, to Yeda Research & Development Co., Ltd. Instrument for viscoelastic measurement. 4,250,894, Cl. 128-774.000.

Frickel, Fritz-Frieder: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.

Fried, Alan J. Dental x-ray film holders. 4,251,732, Cl. 250-479.000.

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Feuchter, Franz-Peter; Roller, Erling; and Giertz, Klaus-Walter, 4,250,948, Cl. 164-269.000.

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Moustakas, Theodore D.; Friedman, Robert A.; and Wronski, Christopher R., 4,251,289, Cl. 136-255.000.

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Brandes, Wilhelm; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Kramer, Wolfgang, 4,251,512, Cl. 424-164.000.

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Palau, Joseph; and Froment, Jean-Paul, 4,250,930, Cl. 139-324.000.

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Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.

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Ilvespaa, Atso; and Fuhrer, Walter, 4,251,542, Cl. 424-274.000.

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Kimura, Tsutomu, 4,251,821, Cl. 346-108.000.
Masuyama, Kenichi; Kitamoto, Tatsuji; and Yamada, Yasuyuki, 4,251,843, Cl. 360-137.000.
Minamizono, Junji; Yoneyama, Masakazu; and Kishimoto, Shinzo, 4,251,626, Cl. 430-527.000.
Oda, Kazutaka; and Okishi, Yoshio, 4,251,620, Cl. 430-300.000.
Saeki, Keiso; Matsukawa, Hiroharu; and Satomura, Masato, 4,251,386, Cl. 252-316.000.

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Fujio, Masaaki, 4,250,686, Cl. 53-296.000.

Fujii, Tadashi, to Ricoh Company, Ltd. Wet type direct recording method. 4,251,827, Cl. 346-165.000.

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Mimura, Koji; Takemura, Toru; and Fujinaga, Yoshikazu, 4,251,587, Cl. 428-233.000.

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Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, 4,251,269, Cl. 75-60.000.
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Hara, Keiichi; and Fujisawa, Tomoji, 4,251,175, Cl. 409-140.000.

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Momose, Tsugio; Fujita, Akira; and Kubo, Kanji, 4,251,859, Cl. 364-200.000.

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Inoue, Tsuyoshi, 4,251,761, Cl. 318-630.000.

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Iwasaki, Shunichi; and Nakamura, Yoshihisa, 4,251,842, Cl. 360-134.000.
Mikami, Tomohisa; Matsuda, Tadashi; and Abe, Fumitaka, 4,251,825, Cl. 346-160.000.
Sakurai, Junji, 4,251,828, Cl. 357-23.000.

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Morishita, Akio; Mizukado, Masayoshi; and Fukumura, Naoe, 4,250,785, Cl. 83-552.000.

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Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.

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Koshikawa, Takao; Ueda, Tunehiro; and Fukushima, Katsuji, 4,250,945, Cl. 164-86.000.

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Sigan, Jack W.; and Fuller, James G., 4,251,385, Cl. 252-182.000.

Funk, Charles E., to Met-L-Parts, Inc. Method of making a lined conduit section. 4,251,018, Cl. 228-122.000.

Furner, Ana Maria: *See*—
Furner, John A., 4,251,688, Cl. 179-1.0GQ.

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Furuta, Yoko: *See*—
Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,251,652, Cl. 528-279.000.

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Baril, Jacques; Gaborieau, Jean-Yves; and Lheureux, Philippe, 4,250,727, Cl. 72-46.000.

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Brown, Michael J., 4,251,522, Cl. 424-214.000.
Resnick, Bruce M., 4,251,544, Cl. 424-320.000.
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Gajewski, Robert J., to General Mills, Inc. Low-moisture, frangible aerated confections and method of preparation. 4,251,561, Cl. 426-571.000.

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Altenburg, Hovey S., 4,251,198, Cl. 425-67.000.

Gale, Floyd C., Jr. Combined frame for tent field enlarging pack. 4,251,015, Cl. 224-154.000.

Gallagher, Terence J.: *See*—
Boyson, Bert; Gallagher, Terence J.; and Porsche, William E., 4,250,806, Cl. 101-2.000.

Gallien, John P.; Mackey, Francis P.; Sadoski, Tadius T.; and Taubner, Fred R., to GTE Products Corporation. Fluorescent lamp for use in liquid analysis. 4,251,750, Cl. 313-487.000.

Galperin, Alexandr L.; Onikov, Eduard A.; Zabotin, Alexandr A.; and Loschilin, Evgeny D. Method of and an apparatus for supplying weft thread carriers in travelling-wave looms. 4,250,932, Cl. 139-436.000.

Gambee, Leo E.: *See*—
Liu, Hsin-Tuan; Perrone, George L.; and Gambee, Leo E., 4,251,183, Cl. 415-198.100.

GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Mitzel, Wilhelm, 4,251,067, Cl. 271-196.000.

Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., to International Business Machines Corporation. Method for forming semiconductor structure with improved isolation between two layers of polycrystalline silicon. 4,251,571, Cl. 427-89.000.

Gardenghi, Robert A.; and Hooper, Edward H., to United States of America, Air Force. High power pulser. 4,251,741, Cl. 307-260.000.

Garner, Larry. Method and article for use in building construction. 4,250,670, Cl. 52-92.000.

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Liu, Hsin-Tuan; Perrone, George L.; and Gambee, Leo E., 4,251,183, Cl. 415-198.100.
McInerney, Charles E., 4,251,050, Cl. 251-61.000.

Garrison, Harry D., to Conoco, Inc. Production of aluminum alkyls. 4,251,453, Cl. 260-448.00A.

Gass, John C.; Kerr, Noell C.; and Pittman, Robert W., to Texaco Inc. Method for lifting oil in a well. 4,251,191, Cl. 417-111.000.

Gauberthier, Joseph J.; and Paradowski, Henri, to Compagnie Francaise d'Etudes et de Construction Technip. Method and apparatus for cooling a gaseous mixture. 4,251,247, Cl. 62-9.000.

Gaudenzi, Gene J., to International Business Machines Corporation. Dottable active collector driver circuit. 4,251,737, Cl. 307-209.000.

Geb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H.: *See*—
Krause, Rolf, 4,251,112, Cl. 299-45.000.

Gebauer, Hans-Jurgen, to Josef Meissner GmbH & Co. Continuous closed loop nitration of polyhydric alcohols. 4,251,455, Cl. 260-467.000.

Geist, Bernard W.: *See*—
Doyle, Richard H.; and Geist, Bernard W., 4,251,017, Cl. 227-8.000.

Gename, John L., to Popeil Brothers, Inc. Hose reel. 4,251,038, Cl. 242-86.000.

General Electric Company: *See*—
Baliga, Bantval J.; and Gidley, Gerald B., 4,251,299, Cl. 148-171.000.
Castonguay, Roger N.; and Jencks, Charles L., 4,251,702, Cl. 200-153.0SC.
Crowther, Russell L., 4,251,321, Cl. 176-78.000.
Green, Walter K., 4,251,744, Cl. 307-362.000.
Grimm, Bernard J.; and Dossett, Richard A., 4,250,719, Cl. 62-382.000.
Lewis, Walter E.; and Hurko, Bohdan, 4,251,716, Cl. 219-446.000.
Liu, Ping Y., 4,251,647, Cl. 525-91.000.
Mark, Victor; and Bostick, Edgar E., 4,251,434, Cl. 260-45.8RW.
Russell, Ronald R.; and Aitken, Donald F., Jr., 4,251,789, Cl. 335-174.000.
Schultz, William J.; and Van Bennekom, Carl F., 4,251,771, Cl. 324-150.000.
Tunder, Richard S., 4,251,328, Cl. 204-15.000.
Walker, Loren H.; and Cutler, John H., 4,251,763, Cl. 318-803.000.
Wilbers, Lawrence G.; and Schweikert, Wilbur H., 4,250,610, Cl. 29-424.000.
Zamek, Otto S., 4,251,423, Cl. 260-33.20R.

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Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., 4,251,560, Cl. 426-565.000.

General Mills, Inc.: *See*—
Gajewski, Robert J., 4,251,561, Cl. 426-571.000.
VanHulle, Glenn J.; Anker, Charles A.; and Franssell, Dean E., 4,251,551, Cl. 426-94.000.

General Motors Corporation: *See*—
Minnis, Gary R.; and Stiles, John L., 4,251,193, Cl. 417-300.000.

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Brown, Charles D.; Plummer, Cole N.; Tripp, Roger N.; and Fernald, Maurice E., 4,251,190, Cl. 417-68.000.
Svet, Frank A., 4,251,041, Cl. 246-128.000.

General Tire & Rubber Company, The: *See*—
Neubert, Terry C., 4,251,409, Cl. 260-29.300.

Gerber, Hans: *See*—
Danner, Bernard; Gerber, Hans; and Pummer, Helmut, 4,251,410, Cl. 260-29.40A.

Geremia, Joseph M.: *See*—
Horwinski, Elwood R.; Geremia, Joseph M.; and Jarmie, John, 4,250,967, Cl. 169-49.000.

Germann, Willy, to BBC Brown, Boveri & Company, Limited. Apparatus for conducting liquid helium between a transporter and an electric machine. 4,250,713, Cl. 62-55.000.

Germann, Willy, to BBC Brown, Boveri & Company, Limited. Electrical lead-through apparatus. 4,251,680, Cl. 174-18.000.

Germann, Willy, to BBC Brown, Boveri & Company, Limited. Method and apparatus for cooling superconductive windings of electric machines. 4,251,745, Cl. 310-52.000.

Gersch, Richard C., to Subco, Inc. Gauging and tool control system for production of identical parts. 4,251,760, Cl. 318-604.000.
Gershon Meckler Associates, P.C.: *See*—
Meckler, Gershon, 4,250,675, Cl. 52-221.000.
Gesellchen, Paul D.; and Smiley, David L., to Eli Lilly and Company. Pharmacologically active peptides. 4,251,439, Cl. 260-112.50R.
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Beckmann, Klaus; and Grisebach, Hans-Theodor, 4,251,110, Cl. 299-17.000.
Grundken, Dieter; and Kerklies, Bodo, 4,250,989, Cl. 198-729.000.
Ghilardi, Jean-Pierre: *See*—
Tuson, Samuel; and Ghilardi, Jean-Pierre, 4,250,918, Cl. 137-580.000.
Gidley, Gerald B.: *See*—
Baliga, Bantval J.; and Gidley, Gerald B., 4,251,299, Cl. 148-171.000.
Giertz, Klaus-Walter: *See*—
Feuchter, Franz-Peter; Roller, Erling; and Giertz, Klaus-Walter, 4,250,948, Cl. 164-269.000.
Gilbert, Bruno J. Collapsible lounging chair. 4,251,106, Cl. 297-18.000.
Gilbert, Earl F., to Westvaco Corporation. Returnable beverage carrier. 4,250,992, Cl. 206-162.000.
Gilbert, Ronald E.; and Kochhar, Rajindar K., to Gulf Oil Corporation. Titanium chloride propylene polymerization catalyst and process for polymerizing propylene therewith. 4,251,389, Cl. 252-429.00B.
Gilbey, Guy, to Sodastream Limited. Aerating apparatus. 4,251,473, Cl. 261-51.000.
Ginger, Rodney E.: *See*—
Angood, Arthur C.; Ginger, Rodney E.; and Jarrett, Graham, 4,251,580, Cl. 428-92.000.
Gingerich, David L., to Champion International Corporation. Gum thickness regulator. 4,251,566, Cl. 427-10.000.
Ginsburg, David; and Mayer, Wilfried J. W., to Miles Laboratories, Inc. Electrolytic reduction of naphthalene to isotetralin. 4,251,332, Cl. 204-59.00R.
Giraldi, Piernicola: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
Glaser, Fritz, to Deere & Company. Axial flow rotary combine harvester with plenum-like separator housing. 4,250,897, Cl. 130-27.00T.
Global Coatings Limited: *See*—
Kaufmann, John H., 4,251,578, Cl. 428-53.000.
Godat, Jean, to Fonderie & Ateliers des Sablons. Apparatus for the preparation of mixtures in variable quantities from a formulation in parts. 4,250,749, Cl. 73-290.00R.
Godson, David H.: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,251,262, Cl. 71-92.000.
Goedicke, Eitel, to Hoechst Aktiengesellschaft. Device for holding a granular catalyst. 4,251,487, Cl. 422-179.000.
Goetemann, Gerald B.; and Rackley, Robert L., to Du Pont de Nemours, E. I., and Company. Hollow monofilaments in paper-making belts. 4,251,588, Cl. 428-224.000.
Goetze AG: *See*—
Feller, Otto; Kuhl, Manfred; and Skrobek, Alois, 4,250,779, Cl. 82-18.000.
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N. Device for guniting the lining of casting ladles. 4,251,063, Cl. 266-281.000.
Goldhaber, Richard P.; Munsch, John M.; and Wolf, Ludwig, Jr., to Baxter Travenol Laboratories, Inc. Method for rebonding tubing elements used in needle assemblies. 4,251,310, Cl. 156-273.000.
Goldie, David J.; Ismail, Adel Abbas A.; and West, Peter M. Method and apparatus for the detection of a specific binding protein. 4,251,360, Cl. 424-1.500.
Goldie, Harry; and Stitzer, Steven N., to United States of America, Air Force. Stepped-rod ferrite microwave limiter having wide dynamic range and optimal frequency selectivity. 4,251,786, Cl. 333-17.00L.
Gomez, Ernesto E. Thermopile formed of conductors. 4,251,290, Cl. 136-206.000.
Gomez, Ernesto E. Thermoelectric generator with latent heat storage. 4,251,291, Cl. 136-206.000.
Goodman, James A., to Consolidated Foods Corp. Apparatus for making corrugated packages. 4,250,797, Cl. 93-58.000.
Gordon Barlow Design: *See*—
Barlow, Gordon A.; Krutsch, John R.; and Zidman, Michael J., 4,250,656, Cl. 46-44.000.
Barlow, Gordon A.; and Janiszewski, Anthony, 4,250,657, Cl. 46-44.000.
Gordon, Marvin, to Whitman Medical Corporation. Stabilizing fitting for an intravenous catheter. 4,250,880, Cl. 128-214.00R.
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Jeenicke, Edmund; Klotzner, Winfried; Meichle, Clemens; Schenk, Manfred; and Gorille, Ingo, 4,250,858, Cl. 123-480.000.
Gorodetsky, Yakov I.: *See*—
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D., 4,250,840, Cl. 122-6.00A.
Goto, Takaharu: *See*—
Iyoki, Takeshi; Katsuki, Taichi; Mizokawa, Takumi; and Goto, Takaharu, 4,251,248, Cl. 62-21.000.
Goto, Tetsuro: *See*—
Sugimori, Shiro; Goto, Tetsuro; and Maruyama, Sumiko, 4,251,147, Cl. 354-127.000.
Grabarczyk, Frank A.: *See*—
Zaffrann, Albert A.; Borchardt, Robert E.; and Grabarczyk, Frank A., 4,251,700, Cl. 200-146.00R.
Graber, Alfred, to Societe Electrique Sterling. Method and apparatus for stripping insulated electric conductors. 4,250,772, Cl. 81-9.510.
Graham Magnetics Incorporated: *See*—
Deffeyes, Robert J.; and Armstrong, Harris W., 4,251,275, Cl. 106-1.140.
Grant, Glenn G. Non-metallic sprocket chain having quick detachable, twist-locking pivot pins. 4,250,764, Cl. 474-207.000.
Grants, Valdis; and Schultz, Ronald E., to Allen-Bradley Company. Fault detection apparatus for a programmable controller. 4,251,883, Cl. 371-29.000.
Green, Walter K., to General Electric Company. Pulse conversion circuit. 4,251,744, Cl. 307-362.000.
Greenwood, Douglas: *See*—
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,251,262, Cl. 71-92.000.
Grenon, Lawrence A., to Motorola, Inc. Electroplating method. 4,251,327, Cl. 204-15.000.
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Zimmermann, Franz; and Ursprung, Karl, 4,251,156, Cl. 355-41.000.
Gries, Josef: *See*—
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.
Griffin International, Inc.: *See*—
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., 4,251,240, Cl. 55-168.000.
Grillmeier, Alfred: *See*—
Lueneberg, Hartmut; Maennl, Reinhard; and Grillmeier, Alfred, 4,250,687, Cl. 53-435.000.
Grimm, Bernard J.; and Dossett, Richard A., to General Electric Company. Household refrigerator humidity controlled pan assembly. 4,250,719, Cl. 62-382.000.
Grimsley, R. Leroy, to Conoco, Inc. Hybrid gas flotation separator. 4,251,361, Cl. 210-703.000.
Grimsley, R. Leroy: *See*—
Casad, Burton M.; and Grimsley, R. Leroy, 4,251,369, Cl. 210-104.000.
Grisebach, Hans-Theodor: *See*—
Beckmann, Klaus; and Grisebach, Hans-Theodor, 4,251,110, Cl. 299-17.000.
Groetschel, Karl M. Fastening means for roof mats for mine workings. 4,251,168, Cl. 405-288.000.
Grof, Helmut; Wamser, Anton; and Reimpell, Uwe, to Leybold-Heraeus GmbH. Electrical melting apparatus with multiple electrode holding arms. 4,251,678, Cl. 13-14.000.
Grosse, Joachim: *See*—
Holzmann, Dieter; and Grosse, Joachim, 4,251,805, Cl. 340-365.00S.
Grosskopf, Rudolf, to Carl Zeiss-Stiftung. Heartbeat monitoring process and device. 4,250,888, Cl. 128-702.000.
Gruetzmacher, Gordon D.; and Czuba, Leonard J., to Pfizer Inc. Compositions containing N-nitrosamine formation or oxidation inhibitors and the use thereof. 4,251,563, Cl. 426-605.000.
Grundken, Dieter; and Kerklies, Bodo, to Gewerkschaft Eisenhutte Westfalia. Curved section and guide assembly. 4,250,989, Cl. 198-729.000.
GTE Products Corporation: *See*—
Ball, George A., Jr., 4,251,792, Cl. 338-22.00R.
Burdick, Glen A., 4,251,747, Cl. 313-348.000.
Gallien, John P.; Mackey, Francis P.; Sadoski, Tadius T.; and Taubner, Fred R., 4,251,750, Cl. 313-487.000.
Mager, Eric L.; and Schreurs, Willy P., 4,251,569, Cl. 427-58.000.
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Fournet, Gaston; Gueroult, Alain; and Sauterey, Daniel, 4,251,549, Cl. 426-19.000.
Guerra, Luis R.: *See*—
May, Paul; and Guerra, Luis R., 4,251,215, Cl. 433-168.000.
Gulf Oil Corporation: *See*—
Antonoplos, Patricia A.; and Heilman, William J., 4,251,420, Cl. 260-30.200.
Chow, Wai Y.; and Heilman, William J., 4,251,417, Cl. 260-30.200.
Chow, Wai Y.; and Thackaberry, S. Paul, 4,251,418, Cl. 260-30.200.
Gilbert, Ronald E.; and Kochhar, Rajindar K., 4,251,389, Cl. 252-429.00B.
Heilman, William J.; and Hurley, Daniel J., 4,251,419, Cl. 260-30.200.
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Carr, Norman L.; and McGinnis, Edgar L., 4,251,364, Cl. 210-777.000.
Jewell, Douglas M.; and Moon, William G., 4,250,964, Cl. 166-303.000.
Madgavkar, Ajay M.; Vogel, Roger F.; and Swift, Harold E., 4,250,962, Cl. 166-256.000.
Swift, Harold E.; Innes, Robert A.; and Adams, Phillip, 4,251,465, Cl. 564-479.000.
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May, Paul; and Guerra, Luis R., 4,251,215, Cl. 433-168.000.

Gullo, James M.; Heilman, William P.; Wayner, Robert J.; and Moser, Robert E., to Diamond Shamrock Corporation. Pharmacologically active substituted 1,2,4-triazines. 4,251,527, Cl. 424-249.000.

Gulsby, Jerry G., to Randall Corporation, The. Low temperature process for separating propane and heavier hydrocarbons from a natural gas stream. 4,251,249, Cl. 62-28.000.

Gundlach, Rudolf, to Frohlich & Wolff GmbH. Multifilament thread and method of forming same. 4,250,702, Cl. 57-251.000.

Gunther, Conrad J., to Dzus Fastener Co., Inc. Slotted fastener. 4,250,600, Cl. 24-221.00A.

Gupta, Tarun K. S.: *See*—
Sheasby, Peter G.; Short, Edward P.; and Gupta, Tarun K. S., 4,251,330, Cl. 204-35.00N.

Gurries Company, The: *See*—
Gurries, Raymond A., 4,250,760, Cl. 74-61.000.
Gurries, Raymond A., 4,251,111, Cl. 299-37.000.

Gurries, Raymond A., to Gurries Company, The. Drive assembly for pavement planing apparatus. 4,250,760, Cl. 74-61.000.

Gurries, Raymond A., to Gurries Company, The. Resonant beam for tool driving apparatus. 4,251,111, Cl. 299-37.000.

Guseinov, Chingiz S.: *See*—
Pakki, Viktor I.; Guseinov, Chingiz S.; Bogdanovich, Sabir Y.; and Guzhin, Petr D., 4,251,375, Cl. 210-304.000.

Gussak, Lev A.: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.

Gutierrez, Antonio: *See*—
Brois, Stanley J.; Gutierrez, Antonio; and Feldman, Nicholas, 4,251,232, Cl. 44-63.000.

Gutman, Arnold D., to Stauffer Chemical Company. N-substituted, 2-phenoxynicotinamide compounds and the herbicidal use thereof. 4,251,263, Cl. 71-94.000.

Guzhin, Petr D.: *See*—
Pakki, Viktor I.; Guseinov, Chingiz S.; Bogdanovich, Sabir Y.; and Guzhin, Petr D., 4,251,375, Cl. 210-304.000.

Gyongyos, Ivan: *See*—
Buxmann, Kurt; Bolliger, Martin; and Gyongyos, Ivan, 4,250,950, Cl. 164-430.000.

Gysling, Henry J., to Eastman Kodak Company. Imaging process involving thermal decomposition of Te(II) coordination complexes. 4,251,623, Cl. 430-353.000.

H. K. Ferguson Company, The: *See*—
Cerny, Rodney A.; and Dolesh, Robert P., 4,251,490, Cl. 423-179.000.

Haak, Willard J.; Marsden, Howard A.; and Mueller, James P., to Caterpillar Tractor Co. High pressure hydraulic system. 4,250,794, Cl. 91-420.000.

Haarer, Steven R.: *See*—
Ford, James A.; and Haarer, Steven R., 4,250,597, Cl. 24-132.00R.

Habdas, Edward P.; and Aaron, Jon D., to UOP Inc. Solid electrolyte oxygen sensor with integral heater. 4,251,342, Cl. 204-195.00S.

Hackenbroch, Wilhelm T.: *See*—
Diersing, Raymond A.; Hackenbroch, Wilhelm T.; Schweikle, George E.; and Stanback, Harris I., 4,251,851, Cl. 361-363.000.

Haddad, James H.: *See*—
Daviduk, Nicholas; and Haddad, James H., 4,251,484, Cl. 422-145.000.

Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus. Battery. 4,251,606, Cl. 429-194.000.

Hagiri, Minoru: *See*—
Sakamoto, Hiroshi; Nomura, Minoru; and Hagiri, Minoru, 4,251,593, Cl. 428-411.000.

Halcon Research and Development Corporation: *See*—
Pugach, Joseph, 4,251,458, Cl. 260-546.000.

Haldex AB: *See*—
Wallqvist, Sven, 4,250,748, Cl. 73-247.000.

Hall, Graham W.: *See*—
Davison, Joseph A.; Hall, Graham W.; Hodges, Newton J.; and Price, David W., 4,251,413, Cl. 260-29.6MM.

Hall, James D. Rock drilling apparatus. 4,250,973, Cl. 173-147.000.

Hall, Joseph E., to Texas Instruments Incorporated. Block output CCD imager. 4,251,834, Cl. 358-213.000.

Hallberg, Joren R. Clipping apparatus. 4,250,699, Cl. 56-235.000.

Halliburton Company: *See*—
Streich, Steven G.; and Knox, Lloyd C., 4,250,966, Cl. 166-328.000.

Halmar Electronics, Inc.: *See*—
Sites, George A., 4,251,853, Cl. 361-394.000.

Halstead, Raymond T.: *See*—
Raab, Andrew F.; and Halstead, Raymond T., 4,251,698, Cl. 200-61.860.

Hamabata, Toshihiro; and Umeki, Shinji, to TDK Electronics, Co. Ltd. Process for producing acicular goethite. 4,251,504, Cl. 423-632.000.

Hamilton, Thomas D.: *See*—
Hamilton, Thomas W.; Hamilton, Thomas D.; and Hamilton, Timothy J., 4,251,011, Cl. 221-211.000.

Hamilton, Thomas W.; Hamilton, Thomas D.; and Hamilton, Timothy J. Machines for handling seeds. 4,251,011, Cl. 221-211.000.

Hamilton, Timothy J.: *See*—
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Hamlyn, Maxwell C., to Allied Chemical Corporation. Continuous spin-draw polyester process. 4,251,481, Cl. 264-210.300.

Hammond, Kenneth G.; and Chafetz, Harry, to Texaco Inc. Quaternary ammonium diester salt composition and hydrocarbon oil containing same. 4,251,380, Cl. 252-34.000.

Hanada, Tosiro: *See*—
Yamanisi, Kazuhiko; Tokuda, Kuniaki; and Hanada, Tosiro, 4,251,629, Cl. 435-28.000.

Hancock, Harold E., to Power Management Corporation. Arc suppressor circuit. 4,251,845, Cl. 361-8.000.

Handa, Takashi; and Endo, Koichi, to Nohmi Bosai Kogyo Co., Ltd. Method of detecting carbon monoxide. 4,251,225, Cl. 23-232.00E.

Handke, Kenneth E. Clutch apparatus and control. 4,250,983, Cl. 192-12.00D.

Hannesen, Kurt: *See*—
Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,251,335, Cl. 204-98.000.

Hansel, Gernot: *See*—
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,250,971, Cl. 173-21.000.

Hansen, Carl O.: *See*—
Aller, Harold E.; and Hansen, Carl O., 4,251,523, Cl. 424-225.000.

Hansen, H. Gordon, to Royalty Investors. Truck apparatus for skate and skateboard devices. 4,251,087, Cl. 280-11.280.

Hansen, Henning M., to Danfoss A/S. Arrangement for raising a signal to a higher power. 4,251,776, Cl. 328-144.000.

Hansen, Jorgen F.: *See*—
Rasmussen, Mirella E.; Jensen, Jorgen V.; and Hansen, Jorgen F., 4,251,437, Cl. 260-112.00B.

Hansen, Manfred W., to Sack GmbH. Roll-changing apparatus. 4,251,180, Cl. 414-560.000.

Hanson, Richard A., to Sundstrand Data Control, Inc. Movable element with position sensing means for transducers. 4,250,757, Cl. 73-517.00B.

Hanson, Robert P.; and Abegunde, Adedipe, to Wisconsin Alumni Research Foundation. Dry particulate vaccine for oral administration. 4,251,509, Cl. 424-89.000.

Hara, Kazuyuki; and Kamada, Takeshi, to Ricoh Company, Ltd. Recording head. 4,251,822, Cl. 346-139.00C.

Hara, Keiichi; and Fujisawa, Tomoji, to Nippon Kokan Kabushiki Kaisha. Pipe burr cutting apparatus. 4,251,175, Cl. 409-140.000.

Hara, Kunio; Kitamura, Osamu; and Yamaguchi, Katsuji, to Nifco, Inc. Fastening system for securing a trim-fixing device to a substrate. 4,250,596, Cl. 24-73.0HS.

Hara, Shigeyoshi; and Yamada, Tateyoshi, to Teijin Limited. Heat-curable and solvent-soluble ester group-containing polymer compositions and process for their preparation. 4,251,649, Cl. 525-439.000.

Hara, Toshitami; Sato, Yasushi; Takatori, Yasushi; and Shirato, Yoshiaki, to Canon Kabushiki Kaisha. Liquid jet recording method with variable thermal viscosity modulation. 4,251,824, Cl. 346-140.00R.

Harada, Hiroyuki: *See*—
Shimizu, Munetaka; and Harada, Hiroyuki, 4,250,780, Cl. 83-176.000.

Harada, Kazuto; and Yoshitake, Toshihiko, to Kuraray Co., Ltd. Absorbents with improved water absorbing power. 4,251,643, Cl. 525-51.000.

Harada, Michisuke: *See*—
Nakada, Hisao; Harada, Michisuke; Yamase, Yukio; and Matsui, Ryuji, 4,251,414, Cl. 260-297.0NR.
Nakada, Hisao; Harada, Michisuke; and Yoshikoshi, Seiji, 4,251,415, Cl. 260-29.7NR.

Harada, Susumu; and Ninomiya, Masakazu, to Nippondenso Co. Ltd. Method and apparatus for controlling the fuel supply of an internal combustion engine. 4,250,853, Cl. 123-326.000.

Harashima, Koh: *See*—
Kobayashi, Masakazu; Abo, Kenji; and Harashima, Koh, 4,251,558, Cl. 426-473.000.

Hardt, Dietrich: *See*—
Humme, Gert; Ott, Karl-Heinz; Hardt, Dietrich; and Dinges, Karl, 4,251,645, Cl. 525-75.000.

Hares, George B., to Corning Glass Works. Photochromic glasses which darken to a brown hue. 4,251,278, Cl. 106-47.00Q.

Hareyama, Kyuichi, to Nippon Electric Co., Ltd. Current source circuit. 4,251,743, Cl. 307-297.000.

Hargassner, Reinhard: *See*—
Scheinecker, Alois; Scheurecker, Werner; and Hargassner, Reinhard, 4,250,952, Cl. 164-448.000.

Harrill, John D., to Marvel Specialty Company, Inc. Apparatus for separating hosiery. 4,250,723, Cl. 66-147.000.

Harrington, Duane E.; and Spector, George. D Bite lite. 4,250,649, Cl. 43-16.000.

Harris Corporation: *See*—
Miaskoff, Leonard, 4,250,988, Cl. 198-719.000.

Harrison, John E., Jr. Ceiling structure. 4,250,668, Cl. 52-39.000.

Harrison, Shelley A.: *See*—
Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, 4,251,798, Cl. 340-146.3SY.

Hart Ski Mfg. Co., Inc.: *See*—
Theriault, Maurice N.; Teeter, Roger C.; and Wirz, Francois, 4,250,585, Cl. 9-310.00A.

Hart, Thomas G., to Energy Development Associates, Inc. Method of storing electrical energy. 4,251,568, Cl. 429-49.000.

Harte, Heinz, to Hauni-Werke Korber & Co., KG. Apparatus for classifying the constituents of a pneumatically conveyed tobacco-containing stream. 4,251,356, Cl. 209-250.000.

Hartlaub, Jerome T.; Smith, Bobby L.; and Powell, Richard M., to Medtronic, Inc. Apparatus for and method of programming the

minimum energy threshold for pacing pulses to be applied to a patient's heart. 4,250,884, Cl. 128-419.0PT.

Harvey, Dennis: *See—*
Martin, Barrie J.; Harvey, Dennis; and Stanwell, Peter, 4,251,031, Cl. 239-102.000.

Harvey, Geoffrey: *See—*
Wilson, Alexander J.; Margetts, Hugh G.; and Harvey, Geoffrey, 4,250,981, Cl. 188-327.000.

Harvey Hubbell, Incorporated: *See—*
Senften, John W., 4,250,982, Cl. 191-39.000.

Harwood, Clifford: *See—*
Jones, William C.; and Harwood, Clifford, 4,250,890, Cl. 128-728.000.

Hash, Jack J. Brush and mesquite cutter. 4,250,696, Cl. 56-14.700.

Hashimoto, Mitsuru: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,614, Cl. 430-79.000.

Hashimoto, Nobuyuki: *See—*
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Watanabe, Tsukasa, 4,250,924, Cl. 137-868.000.

Hastings-James, Richard; and Holbrook, George W., to Canadian Patents & Dev. Ltd. Loudspeaker telephone apparatus. 4,251,689, Cl. 179-1.0HF.

Hatanaka, Masataka: *See—*
Ozawa, Kiyomi; Ishii, Shigeru; and Hatanaka, Masataka, 4,251,662, Cl. 546-301.000.

Hatebur Umformmaschinen AG: *See—*
Richner, Hans, 4,250,730, Cl. 72-344.000.

Hauni-Werke Korber & Co., KG: *See—*
Harte, Heinz, 4,251,356, Cl. 209-250.000.

Hausberg, Hans-Heinrich; Koppe, Volker; Poetsch, Eike; Saiko, Otto; and Seyfried, Christoph, to Merck Patent Gesellschaft mit beschrankter Haftung. Indolealkylamines and processes for their preparation. 4,251,538, Cl. 424-267.000.

Haven, Duane A.; and Chitwood, Donald P., to Tektronix, Inc. Method of making multicolor CRT display screen with minimal phosphor contamination. 4,251,610, Cl. 430-25.000.

Hawkhead Bray & Son Limited: *See—*
Spedding, Ian M., 4,250,735, Cl. 72-455.000.

Hayakawa, Yoshihiro: *See—*
Shibata, Shoson; Sato, Akio; Hayakawa, Yoshihiro; and Bamba, Fumio, 4,250,939, Cl. 152-362.00R.

Hayashi, Hiroshi: *See—*
Kobayashi, Osamu; Yukimoto, Kohji; and Hayashi, Hiroshi, 4,250,905, Cl. 133-5.00R.

Haynes, Charles W.; and Pitts, Adrian E., to Joy Manufacturing Company. Rotary tong incorporating interchangeable jaws for drill pipe and casing. 4,250,773, Cl. 81-57.180.

Hehl, Karl. Injection unit for injection molding machine. 4,251,204, Cl. 425-582.000.

Heian, Glenn A., to Allis-Chalmers Corporation. Process for handling and utilizing system gas in a pyro-processing system. 4,251,280, Cl. 106-100.000.

Heiberger, Philip, to Du Pont de Nemours, E. I., and Company. Waterborne alkyds. 4,251,406, Cl. 260-22.00R.

Heidolph & Zinsser GmbH: *See—*
Zinsser, Rudolf; and Prestl, Karl, 4,251,189, Cl. 416-240.000.

Heilhecker, Joe K.; Robinson, Leon H., Jr.; and Peters, Beldon A., to Exxon Production Research Company. Apparatus and method for detecting abnormal drilling conditions. 4,250,974, Cl. 175-48.000.

Heilman, William J.; and Hurley, Daniel J., to Gulf Oil Corporation. Novel vinyl end-capped polyimide oligomers. 4,251,419, Cl. 260-30.200.

Heilman, William J.: *See—*
Antonoplos, Patricia A.; and Heilman, William J., 4,251,420, Cl. 260-30.200.
Chow, Wai Y.; and Heilman, William J., 4,251,417, Cl. 260-30.200.

Heilman, William P.: *See—*
Gullo, James M.; Heilman, William P.; Wayner, Robert J.; and Moser, Robert E., 4,251,527, Cl. 424-249.000.

Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, to BASF Aktiengesellschaft. Process for the manufacture of organic polymer polyol. 4,251,411, Cl. 260-29.60E.

Helderman, James F. Removable and reusable anchor and method. 4,250,681, Cl. 52-704.000.

Helgesson, Anders T.; Magnusson, Gunnar B.; and Sederholm, Johan F., to Svenska Traforskningsinstitutet. Method and an apparatus for cross-cutting trees. 4,250,935, Cl. 144-2.0AA.

Hellander, Roland. Casting weight. 4,250,652, Cl. 43-41.200.

Henderson, Courtland M.: *See—*
Leonard, James H.; and Henderson, Courtland M., 4,251,302, Cl. 156-60.000.

Hendriks, Dieter, to Sublistatic Holding SA. Magnetic toners and development process. 4,251,616, Cl. 430-107.000.

Hendriks, Dieter: *See—*
Mehl, Wolfgang; Hendriks, Dieter; and Decombe, Robert, 4,251,611, Cl. 430-42.000.

Henkel Corporation: *See—*
Krbechek, Leroy O., 4,251,450, Cl. 260-397.100.
Spitzner, Ernest B., 4,251,664, Cl. 548-138.000.

Henry, Richard K.: *See—*
Varrasso, Eugene C.; and Henry, Richard K., 4,251,475, Cl. 264-40.100.

Hensler, Paul L.; Church, Delmar F.; and Beger, Robert W., to FMC Corporation. Preparation of granular sodium tripolyphosphate products from screen undersize sodium tripolyphosphate particles. 4,251,498, Cl. 423-315.000.

Herbrechtsmeier, Peter: *See—*
Steiner, Rudolf; and Herbrechtsmeier, Peter, 4,251,505, Cl. 423-659.000.

Herliczek, Siegfried H.; and Thomas, Lazarus D., to Libbey-Owens-Ford Company. Method of restoring or repairing reflective glass. 4,251,572, Cl. 427-142.000.

Herring, Gerald E. Pivoted adjustable lever with grab link. 4,250,769, Cl. 74-525.000.

Hertfelder, Wilhelm; and Junginger, Erich, to Robert Bosch GmbH. Fluid flow control valve especially for use in heating installations for motor vehicles and a method of assembling and adjusting the valve. 4,251,052, Cl. 251-129.000.

Hertler, Walter R., to Du Pont de Nemours, E. I., and Company. Coating compositions containing polymers with isocyano groups and nickel oligomerization catalysts. 4,251,421, Cl. 260-31.20N.

Hertler, Walter R., to Du Pont de Nemours, E. I., and Company. Coating compositions containing polymers with isocyano groups and alkylboranes. 4,251,422, Cl. 260-31.20N.

Hess, Patrick H., to Chevron Research Company. Selective permeability reduction with polymerizable monomers around steam injection wells. 4,250,963, Cl. 166-288.000.

Hesse, Wolfgang; Sattelmeyer, Richard; and Teschner, Eckart, to Hoechst Aktiengesellschaft. Synthetic resin binders and their use for the manufacture of abrasives. 4,251,408, Cl. 260-29.300.

Heye, Hermann: *See—*
Becker, Kurt; and Schaar, Lothar, 4,251,253, Cl. 65-267.000.

Hickey, Gerald A.: *See—*
Rees, David H.; and Hickey, Gerald A., 4,250,662, Cl. 47-58.000.

Hildebrecht, Harold V., to Towmotor Corporation. Control pedal. 4,250,768, Cl. 74-512.000.

Hill, Harold W., Jr.: *See—*
Brady, Donnie G.; Williams, Ralph P.; and Hill, Harold W., Jr., 4,251,575, Cl. 427-341.000.

Hipp, Richard D., Jr., to Minnesota Mining and Manufacturing Company. Developer powder supply cartridge. 4,251,001, Cl. 215-237.000.

Hiraki, Akio: *See—*
Ogura, Tsugitoshi; Hiraki, Akio; and Kajimoto, Hikokusu, 4,251,345, Cl. 208-8.0LE.

Hiratsuka, Kenichi: *See—*
Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, 4,251,691, Cl. 179-2.0TV.

Hirleman, Edwin D., Jr. Technique for simultaneous particle size and velocity measurement. 4,251,733, Cl. 250-575.000.

Hirsch, Jean-Raphael; and Di Crescenzo, Claude. Anti-seismic constructions, in particular constructions with basements forming anti-atomic shelters. 4,250,671, Cl. 52-167.000.

Hisano, Seiichi: *See—*
Tezuka, Kazumasa; Hisano, Seiichi; Sasaki, Hyoichi; and Watanabe, Ikuo, 4,251,497, Cl. 423-242.000.

Hitachi Chemical Company, Ltd.: *See—*
Arakawa, Kouji; and Nomaguchi, Kanemasa, 4,251,641, Cl. 525-36.000.

Hitachi Koki Co., Ltd.: *See—*
Sagae, Syoji, 4,251,823, Cl. 346-140.00R.

Hitachi, Ltd.: *See—*
Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, 4,251,691, Cl. 179-2.0TV.
Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.
Kimura, Katsuhiro; Endo, Akira; Sekine, Kenji; Tanigami, Takahiko; and Kaneko, Yoichi, 4,251,817, Cl. 343-5.0DD.
Momose, Tsugio; Fujita, Akira; and Kubo, Kanji, 4,251,859, Cl. 364-200.000.
Sagae, Syoji, 4,251,823, Cl. 346-140.00R.

Hitachi Metals, Ltd.: *See—*
Korenaga, Itsuo, 4,250,606, Cl. 29-148.40D.

Hodges, Newton J.: *See—*
Davison, Joseph A.; Hall, Graham W.; Hodges, Newton J.; and Price, David W., 4,251,413, Cl. 260-29.6MM.

Hoechst Aktiengesellschaft: *See—*
Bauer, Alexander; Leistner, Gerhard; Muller, Gerhard; and Sell, Gunther, 4,251,371, Cl. 210-197.000.
Beck, Gerhard; Bartmann, Wilhelm; Lerch, Ulrich; and Schokens, Bernward, 4,251,669, Cl. 560-121.000.
Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,251,335, Cl. 204-98.000.
Ebert, Hans; Kerber, Hans; and Queck, Robert, 4,251,682, Cl. 174-31.500.
Frolich, Heinrich; and Hunger, Klaus, 4,251,441, Cl. 260-193.000.
Goedicke, Eitel, 4,251,487, Cl. 422-179.000.
Hesse, Wolfgang; Sattelmeyer, Richard; and Teschner, Eckart, 4,251,408, Cl. 260-29.300.
Steiner, Rudolf; and Herbrechtsmeier, Peter, 4,251,505, Cl. 423-659.000.
van Engelen, Gerardus; van Utteren, Tom; and Vonken, Hubertus, 4,251,584, Cl. 428-159.000.

Hoeft, Siegfried; and Klause, Gerhard, to International Standard Electric Corporation. Pushbutton for use with pushbutton switches. 4,251,703, Cl. 200-340.000.

Hoenes, Glenn R.: *See*—
Brackenbush, Larry W.; and Hoenes, Glenn R., 4,251,123, Cl. 312-1.000.

Hofer, Alan; and Yama, Frank, to Pickering & Company. Miniature buzzer. 4,251,807, Cl. 340-384.00R.

Hoffman, Roy L.: *See*—
Mitchell, Glen R.; Soltis, Frank G.; and Hoffman, Roy L., 4,251,860, Cl. 364-200.000.

Hoffmann, Gunter: *See*—
Weissner, Rudiger; Koke, Wilfried; and Hoffmann, Gunter, 4,251,091, Cl. 280-804.000.

Hoffmann, Jurgen, to Kraftwerk Union Aktiengeseilschaft. Check valve with damping device. 4,250,916, Cl. 137-514.500.

Hoffmann-La Roche Inc.: *See*—
Fischli, Albert E.; and Szente, Andre, 4,251,443, Cl. 260-239.30D.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,251,454, Cl. 260-465.00E.

Hohki, Tetsuo: *See*—
Sakamoto, Seiya; and Hohki, Tetsuo, 4,251,625, Cl. 430-396.000.

Hohne, Per; Kontarinis, Andreas; and Titel, Siegfried, to Alfa-Laval Separation A/S. Centrifuge with horizontally journalled rotor. 4,251,023, Cl. 233-1.00R.

Holbrook, George W.: *See*—
Hastings-James, Richard; and Holbrook, George W., 4,251,689, Cl. 179-1.0HF.

Holiday Industries, Inc.: *See*—
King, Robert C., 4,250,910, Cl. 137-268.000.

Hollrock, Richard H., to Kaman Aerospace Corporation. Blade retention bearing for helicopter rotor. 4,251,187, Cl. 416-134.00A.

Holm, Claes H.; and Paulsson, John, to Tuff-Kote Dinol Aktiebolag. Method for rust-protecting treatment. 4,251,573, Cl. 427-236.000.

Holmes, George S.: *See*—
Manizza, Guelfo A.; and Holmes, George S., 4,250,991, Cl. 206-158.000.

Holt, Gordon J., to Britax Weathershields Limited. Mounting ring for sunshine roof assembly. 4,251,104, Cl. 296-216.000.

Holtvogt, Joseph D., to Dayton Sure Grip & Shore Company, The. Swivel hold-down device. 4,251,047, Cl. 249-205.000.

Holzhacker, Albert. Head for an electronic thermometer. 4,250,751, Cl. 73-362.800.

Holzmann, Dieter; and Grosse, Joachim, to ITT Industries, Inc. Circuit arrangement for an input keyboard. 4,251,805, Cl. 340-365.00S.

Homma, Hiroshige: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Kawaguchi, Takeshi, 4,250,979, Cl. 188-71.600.

Honeywell Inc.: *See*—
Adkisson, William M., 4,251,725, Cl. 250-281.000.
Bonne, Ulrich; Nelson, Lorne W.; and Torborg, Ralph H., 4,251,025, Cl. 236-14.000.
Luft, Victor, 4,250,603, Cl. 29-25.350.
Wilwerding, Dennis J., 4,251,740, Cl. 307-247.00A.
Zook, J. David, 4,251,570, Cl. 427-74.000.

Honeywell Information Systems Inc.: *See*—
Bone, Dale H., 4,251,872, Cl. 364-551.000.
Kindell, Jerry L.; and Flynn, Richard T., 4,251,864, Cl. 364-200.000.

Honjo, Shuichi: *See*—
Naka, Akihiro; Honjo, Shuichi; and Aoike, Kaoru, 4,251,229, Cl. 44-51.000.

Hooker Chemicals & Plastics Corp.: *See*—
Salce, Gideon, 4,251,429, Cl. 260-40.00R.

Hooper, Edward H.: *See*—
Gardenghi, Robert A.; and Hooper, Edward H., 4,251,741, Cl. 307-260.000.

Horiishi, Nanao: *See*—
Takedoi, Atushi; Horiishi, Nanao; Matsui, Goro; and Toda, Koji, 4,251,592, Cl. 428-403.000.

Horiuchi, Kunio: *See*—
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,251,791, Cl. 335-302.000.

Hormel, Thad S.: *See*—
Bargeron, Kim G.; Hormel, Thad S.; Winegardner, David K.; and Lovelace, Bruce G., 4,251,459, Cl. 564-215.000.

Horn, Darrell C.; and Claxton, Gerald L., to Up-Right, Inc. Shaker-striker vine harvester. 4,250,700, Cl. 56-330.000.

Horna, Otakar A. Analog to digital converter. 4,251,802, Cl. 340-347.0AD.

Horner, Ronny. Adjustable soldering iron holder. 4,251,043, Cl. 248-117.600.

Horstmann Gear Group Ltd.: *See*—
Biglin, Timothy J., 4,250,737, Cl. 73-23.000.

Horstmann, Hendrik, to Dipl.-Ing. H. Horstmann GmbH. Fault indicator case and mount. 4,251,844, Cl. 361-1.000.

Horwinski, Elwood R.; Geremia, Joseph M.; and Jarmie, John, to Geremia, Joseph M. Safety trash container having a movable closure and an extinguishant. 4,250,967, Cl. 169-49.000.

Horwitz, Joshua, to Aviation Simulation Technology. Yoke assembly for flight simulator. 4,250,636, Cl. 434-55.000.

Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, to Nisshin Steel Co., Ltd. Method for controlling steel making process under reduced pressures. 4,251,269, Cl. 75-60.000.

Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, to Nisshin Steel Co., Ltd. Method of controlling steel making process under atmospheric pressure. 4,251,270, Cl. 75-60.000.

Houle, Elmer R. Safety cutter blade for a rotary trimmer. 4,250,621, Cl. 30-347.000.

Houle, Elmer R. Safety blade for a rotary trimmer. 4,250,622, Cl. 30-347.000.

Houston, Robert J.: *See*—
McCoy, Charles S.; and Houston, Robert J., 4,251,349, Cl. 208-64.000.

Howard, Douglas. Rolling door curtain mounting apparatus. 4,251,039, Cl. 242-86.520.

Howe, Robert K.; and Lee, Len F., to Monsanto Company. 2-Chloro-4-trifluoromethyl-5-thiazolecarboxylic acids and derivatives. 4,251,261, Cl. 71-90.000.

Hoyler, Alfred; and Niklaus, Bernd, to Robert Bosch GmbH. Electromotor driven regulating arrangement, especially for regulating the speed of a motor vehicle. 4,250,984, Cl. 192-12.00D.

Hubalek, Jan; Doksansky, Vladimir; and Michal, Jan, to Institut manipulacnich, dopravnich, obalovych a skladovacich systemu. Automatic release device for lifting slings. 4,251,099, Cl. 294-75.000.

Hubbard, S. Eugene, to Kawneer Company, Inc. Window replacement system. 4,250,673, Cl. 52-211.000.

Huber, Theodor: *See*—
Cocron, Istvan; and Huber, Theodor, 4,251,145, Cl. 354-25.000.

Huch, Albert. Method and apparatus for measuring characteristics of small quantities of liquid dropped onto a thermostatically heated transducer, utilizing a warm-up and measurement program. 4,250,738, Cl. 73-15.400.

Huck Manufacturing Company: *See*—
Ruhl, John H.; and Dixon, Richard D., 4,250,733, Cl. 72-391.000.

Huegel, Frederick G.: *See*—
Pelz, David T.; and Huegel, Frederick G., 4,251,077, Cl. 273-186.00A.

Huffman, Howard E. Auxiliary refrigeration system utilizing atmospheric air. 4,250,716. Cl. 62-180.000.

Hughes Aircraft Company: *See*—
Kolb, William P., 4,251,751, Cl. 315-171.000.
Pastor, Antonio C., 4,251,315, Cl. 156-616.00R.
Sutter, Leroy V., Jr., 4,251,781, Cl. 331-94.5PE.
Young, Frederick A.; and Montgomery, Charles F., 4,251,787, Cl. 333-209.000.

Hughes, George T.: *See*—
Buerkert, Antoinette P.; and Hughes, George T., 4,250,619, Cl. 30-230.000.

Humenik, James N., to International Business Machines Corporation. Solder glass bonded charge electrode assembly for ink jet printers. 4,251,820, Cl. 346-75.000.

Humme, Gert; Ott, Karl-Heinz; Hardt, Dietrich; and Dinges, Karl, to Bayer Aktiengesellschaft. Thermoplastic moulding compositions. 4,251,645, Cl. 525-75.000.

Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,251,092, Cl. 282-27.500.

Hunger, Klaus: *See*—
Frolich, Heinrich; and Hunger, Klaus, 4,251,441, Cl. 260-193.000.

Huntwork, Daniel E.: *See*—
Oberg, Gary; Wocken, Gerald F.; Huntwork, Daniel E.; and Fortun, Wayne M., 4,251,318, Cl. 156-645.000.

Hurko, Bohdan: *See*—
Lewis, Walter E.; and Hurko, Bohdan, 4,251,716, Cl. 219-446.000.

Hurley, Daniel J.: *See*—
Heilman, William J.; and Hurley, Daniel J., 4,251,419, Cl. 260-30.200.

Hutcherson, Henry S.: *See*—
Ziegler, George E., Jr.; and Hutcherson, Henry S., 4,251,312, Cl. 156-465.000.

Hutchinson Industrial Corporation: *See*—
Oberg, Gary; Wocken, Gerald F.; Huntwork, Daniel E.; and Fortun, Wayne M., 4,251,318, Cl. 156-645.000.

Hwang, Ying C.; and Lunden, John W., to United States of America, Air Force. Balanced input zero differential detector. 4,251,738, Cl. 307-231.000.

Hycel, Inc.: *See*—
Angel, Henry R.; and Bachenheimer, Bernard O., 4,251,768, Cl. 324-71.0CP.

Hyldal, Jorgen: *See*—
Pedersen, Hans-Kristian; Sorensen, Frode; and Hyldal, Jorgen, 4,251,758, Cl. 318-254.000.

Ibrahim, Ibrahim M.: *See*—
Dardik, Herbert; Smith, Michael; Ibrahim, Ibrahim M.; and Dardik, Irving I., 4,250,887, Cl. 128-655.000.

Ichiyanagi, Takashi: *See*—
Maruyama, Teruo; and Ichiyanagi, Takashi, 4,251,840, Cl. 360-107.000.

ICI Australia Limited: *See*—
McGarry, Errol-James; Forsyth, Bruce A.; and Wilshire, Colin, 4,251,546, Cl. 424-347.000.

Idemitsu Petrochemical Co. Ltd.: *See*—
Imaizumi, Fumio; Minato, Kazuo; and Kanai, Toshitaka, 4,251,199, Cl. 425-72.00R.

Ihara, Sinji, to Matsushita Electric Works, Ltd. Hair dresser with rolling brush. 4,250,902, Cl. 132-9.000.

Ikea Svenska AB: *See*—
Forsen, John E. S., 4,251,165, Cl. 403-263.000.

Illinois Tool Works Inc.: *See*—
Braun, Leonard C., 4,250,682, Cl. 53-48.000.

Ilvespaa, Atso; and Fuhrer, Walter, to Ciba-Geigy Corporation. Imino compounds. 4,251,542, Cl. 424-274.000.
Imai, Akira: *See*—
Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, 4,251,195, Cl. 425-6.000.
Imaizumi, Fumio; Minato, Kazuo; and Kanai, Toshitaka, to Idemitsu Petrochemical Co. Ltd. Stabilizer for resin bubbles. 4,251,199, Cl. 425-72.00R.
Imperial Chemical Industries Limited: *See*—
Angood, Arthur C.; Ginger, Rodney E.; and Jarrett, Graham, 4,251,580, Cl. 428-92.000.
Brittain, David R.; and Wood, Robin, 4,251,528, Cl. 424-250.000.
Kennedy-Skipton, Henry K.; and Robertson, Thomas, 4,251,430, Cl. 260-40.00R.
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., 4,251,576, Cl. 428-331.000.
Parkin, Paul C., 4,251,200, Cl. 425-131.500.
Ina, Toshikazu: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Incom International Inc.: *See*—
McCloskey, Albert R., 4,251,122, Cl. 308-72.000.
Indak Manufacturing Corp.: *See*—
Raab, Andrew F.; and Halstead, Raymond T., 4,251,698, Cl. 200-61.860.
Industrie Pirelli Societa per Azioni: *See*—
Ferrentino, Antonio, 4,250,914, Cl. 137-501.000.
Ing. C. Olivetti & C., S.p.A.: *See*—
Cresti, Marcello; and Ugo, Franco, 4,251,161, Cl. 400-144.200.
Inland Container Corporation: *See*—
Schwaner, Jon M., 4,251,020, Cl. 229-15.000.
Innes, Robert A.: *See*—
Swift, Harold E.; Innes, Robert A.; and Adams, Phillip, 4,251,465, Cl. 564-479.000.
Inoue, Akio; Kobayashi, Tadahiro; and Iwasa, Toshio, to Asahi Kasei Kogyo Kabushiki Kaisha. Dried porous acrylonitrile polymer membrane, process for producing same and separators made therefrom. 4,251,605, Cl. 429-145.000.
Inoue Gomu Kogyo Kabushiki Kaisha: *See*—
Narita, Kouzi, 4,250,612, Cl. 29-527.100.
Inoue, Tsuyoshi, to Fujitsu Fanuc Limited. Numerical control error compensating system. 4,251,761, Cl. 318-630.000.
Institut Francais du Petrole: *See*—
Deschamps, Andre; Franckowiak, Sigismond; and Sugier, Andre, 4,251,495, Cl. 423-230.000.
Institut manipulacnich, dopravnich, obalovych a skladovacich systemu: *See*—
Hubalek, Jan; Doksansky, Vladimir; and Michal, Jan, 4,251,099, Cl. 294-75.000.
International Business Machines Corporation: *See*—
Debord, Pierre; and Marijon, Jean-Louis, 4,251,803, Cl. 340-347.0CC.
Dodt, William C.; and Lutter, Edward P., 4,251,885, Cl. 371-60.000.
Ecker, Mario E.; and Olson, Leonard T., 4,251,852, Cl. 361-386.000.
Fowler, Raymond L.; Leach, David W.; and Sloan, Lowell T., 4,250,810, Cl. 101-410.000.
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,251,571, Cl. 427-89.000.
Gaudenzi, Gene J., 4,251,737, Cl. 307-209.000.
Humenik, James N., 4,251,820, Cl. 346-75.000.
Jacobs, Walter G., 4,251,841, Cl. 360-122.000.
Janeway, Donald L., III, 4,251,837, Cl. 358-280.000.
Jih, Chentung R., 4,251,799, Cl. 340-146.30H.
Mitchell, Glen R.; Soltis, Frank G.; and Hoffman, Roy L., 4,251,860, Cl. 364-200.000.
Pfeiffer, Hans C.; and Sturans, Maris A., 4,251,728, Cl. 250-396.00R.
Vautier, Remi, 4,251,722, Cl. 235-92.0DM.
Yu, Wellington C., 4,251,871, Cl. 364-518.000.
International Harvester Company: *See*—
Schroeder, William L., 4,251,182, Cl. 414-723.000.
International Standard Electric Corporation: *See*—
Hoeft, Siegfried; and Klause, Gerhard, 4,251,703, Cl. 200-340.000.
Thompson, George H. B., 4,251,298, Cl. 148-171.000.
International Telephone and Telegraph Corporation: *See*—
MacKenzie, William G.; and Asaki, James T., 4,251,696, Cl. 179-103.000.
Sawyer, Edgar W., Jr., 4,251,230, Cl. 44-51.000.
Intong Aktiebolag: *See*—
Jakobsson, Per; and Larsson, Ingemar, 4,250,947, Cl. 164-138.000.
IPCO Corporation: *See*—
Weissman, Bernard, 4,251,210, Cl. 433-76.000.
Weissman, Bernard, 4,251,216, Cl. 433-215.000.
Irick, Gether, Jr.; and Kelly, Charles A., to Eastman Kodak Company. Heterocyclic ester, ultraviolet stabilizers and their use in organic compositions. 4,251,433, Cl. 260-45.8NT.
Irlinger, Frank S.: *See*—
Vago, Otto Z.; and Irlinger, Frank S., 4,250,759, Cl. 73-723.000.
IRT Corporation: *See*—
Vagelatos, Nicholas; Steinman, Donald K.; John, Joseph; and Young, Jack C., 4,251,724, Cl. 250-264.000.
Isaoka, Shin-Ichi: *See*—
Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shin-Ichi; and Tohoma, Wataru, 4,251,651, Cl. 526-204.000.
Isasaki, Shunichi: *See*—
Iwasaki, Shunichi; and Nakamura, Yoshihisa, 4,251,842, Cl. 360-134.000.
Ishiguro, Tamezo, to Otagiri Mercantile Company, Inc. Pendoulously supported magnetically actuated figurine. 4,250,659, Cl. 46-238.000.
Ishii, Masaaki: *See*—
Minoura, Kazuo; and Ishii, Masaaki, 4,251,125, Cl. 350-6.500.
Ishii, Shigeru: *See*—
Ozawa, Kiyomi; Ishii, Shigeru; and Hatanaka, Masataka, 4,251,662, Cl. 546-301.000.
Ishikawa, Hisashi: *See*—
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Ishikawa, Hisashi, 4,251,548, Cl. 426-3.000.
Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See*—
Matsuoka, Hideaki; and Kondo, Nobuhiro, 4,250,710, Cl. 60-602.000.
Ishiwatari, Keizo: *See*—
Kawabata, Hidetsugu; Nagata, Yuji; Ishiwatari, Keizo; and Shimizu, Toshio, 4,251,297, Cl. 148-121.000.
Ismail, Adel Abbas A.: *See*—
Goldie, David J.; Ismail, Adel Abbas A.; and West, Peter M., 4,251,360, Cl. 424-1.500.
Isobe, Takashi: *See*—
Sato, Akira; and Isobe, Takashi, 4,251,134, Cl. 350-257.000.
Isomura, Yasuo: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.
Isono, Katsuo, to Sony Corporation. Index signal amplifier for use in a beam index television receiver. 4,251,832, Cl. 358-67.000.
Isowa Industry Co., Ltd.: *See*—
Abe, Etsuro, 4,251,313, Cl. 156-473.000.
Isoyama, Nobukazu: *See*—
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.
Israfil ogly Mekhtiev, Rafik: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.
ISS Clorius Limited: *See*—
Diprose, Kenneth V.; and Forbes, Arthur S., 4,250,747, Cl. 73-193.00R.
Itagaki, Takaharu: *See*—
Morita, Yoshiharu; Itagaki, Takaharu; Ito, Tsuyoshi; and Wada, Shigenori, 4,251,442, Cl. 260-239.100.
Ito, Kazuhiko, to NGK Insulators, Ltd. Mist eliminator. 4,251,242, Cl. 55-242.000.
Ito, Noriki: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.
Ito, Tsuyoshi: *See*—
Morita, Yoshiharu; Itagaki, Takaharu; Ito, Tsuyoshi; and Wada, Shigenori, 4,251,442, Cl. 260-239.100.
ITT Industries, Inc.: *See*—
Adam, Fritz G., 4,251,829, Cl. 357-23.000.
Belart, Juan, 4,251,114, Cl. 303-6.00A.
Holzmann, Dieter; and Grosse, Joachim, 4,251,805, Cl. 340-365.00S.
Iwaki, Tsutomu: *See*—
Matsumoto, Isao; Iwaki, Tsutomu; and Yanagihara, Nobuyuki, 4,251,603, Cl. 429-94.000.
Iwasa, Toshio: *See*—
Inoue, Akio; Kobayashi, Tadahiro; and Iwasa, Toshio, 4,251,605, Cl. 429-145.000.
Iwasaki, Shunichi; and Nakamura, Yoshihisa, to Isasaki, Shunichi; Sony Corporation; and Fujitsu Limited. Magnetic recording and reproducing device. 4,251,842, Cl. 360-134.000.
Iyoki, Takeshi; Katsuki, Taichi; Mizokawa, Takumi; and Goto, Takaharu, to Kobe Steel, Limited. Method and apparatus for automatic change of operations in air separation plant. 4,251,248, Cl. 62-21.000.
Izumida, Yukihiro: *See*—
Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.
Jacobs Manufacturing Company, The: *See*—
Quenneville, Raymond N.; and Custer, Dennis R., 4,251,051, Cl. 251-129.000.
Jacobs, Walter G., to International Business Machines Corporation. Magnetic head slider assembly. 4,251,841, Cl. 360-122.000.
Jacobsen, Kevin N. Apparatus for use in fishing. 4,250,648, Cl. 43-4.000.
Jacobsen, Stephen C.; Stenehjem, Jerome C.; Stephen, Robert L.; and Luntz, Richard D., to Motion Control, Inc. Non-invasive chemical species delivery apparatus and method. 4,250,878, Cl. 128-207.210.
Jaffe, Stephen B., to Mobil Oil Corporation. Control of gasoline manufacture. 4,251,870, Cl. 364-500.000.
Jagenberg Werke Aktiengesellschaft: *See*—
Deimel, Gerhard; Schmidt, Paul; and Sturm, Harald, 4,251,303, Cl. 156-73.100.
Jakobsson, Per; and Larsson, Ingemar, to Intong Aktiebolag. Gas concrete mold runner and method of use. 4,250,947, Cl. 164-138.000.
Jamet, Andre: *See*—
Rivier, Paul; Bucari, Claude; Topalian, Samuel; and Baud, Alain, 4,250,906, Cl. 135-1.00A.

Janeway, Donald L., III, to International Business Machines Corporation. Three decision thresholding mode switch and method for mode selection. 4,251,837, Cl. 358-280.000.

Janiszewski, Anthony: *See—*
Barlow, Gordon A.; and Janiszewski, Anthony, 4,250,657, Cl. 46-44.000.

Jantzen, Johannes K., to Topex, Inc. Hand held microfilm reader. 4,250,644, Cl. 40-367.000.

Jao, Yun-Chi: *See—*
Chen, Anthony H.; and Jao, Yun-Chi, 4,251,632, Cl. 435-180.000.

Jarmie, John: *See—*
Horwinski, Elwood R.; Geremia, Joseph M.; and Jarmie, John, 4,250,967, Cl. 169-49.000.

Jarre, Wolfgang; Stutz, Herbert; and Schoen, Ernst, to BASF Aktiengesellschaft. Manufacture of flexible foams. 4,251,639, Cl. 521-159.000.

Jarre, Wolfgang: *See—*
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.

Jarrett, Graham: *See—*
Angood, Arthur C.; Ginger, Rodney E.; and Jarrett, Graham, 4,251,580, Cl. 428-92.000.

Jarvenpaa, Kauko; Leinonen, Pertti; and Raisanen, Jouko, to Suunto Oy. Compass apparatus. 4,250,627, Cl. 33-364.000.

Jaszlits, Laszlo: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.

Jaworski, Eugene; and Breslow, Jeffrey D., to Marvin Glass & Associates. Maze game apparatus. 4,251,075, Cl. 273-113.000.

Jeenicke, Edmund; Klotzner, Winfried; Meichle, Clemens; Schenk, Manfred; and Gorille, Ingo, to Robert Bosch GmbH. Input-output unit for microprocessor controlled ignition or injection systems in internal combustion engines. 4,250,858, Cl. 123-480.000.

Jencks, Charles L.: *See—*
Castonguay, Roger N.; and Jencks, Charles L., 4,251,702, Cl. 200-153.0SC.

Jensen, Jorgen V.: *See—*
Rasmussen, Mirella E.; Jensen, Jorgen V.; and Hansen, Jorgen F., 4,251,437, Cl. 260-112.00B.

Jensen, Ragnar A. Collapsible boat. 4,250,583, Cl. 9-2.00C.

Jentzsch, Arndt: *See—*
Johne, Hans; and Jentzsch, Arndt, 4,251,121, Cl. 308-37.000.

Jereb, Richard F.: *See—*
Dogadko, Peter; and Jereb, Richard F., 4,251,848, Cl. 361-196.000.

Jerue, Richard A.; and Ortlieb, Robert M., to DeVlieg Machine Company. Machine tool and method. 4,250,775, Cl. 82-1.00C.

Jespersen, Knud; Bergner, Hans L.; and Buller-Colthurst, Guy E., to Knud Simonsen Industries Limited. Air flow reverser system. 4,250,917, Cl. 137-563.000.

Jewell, Douglas M.; and Moon, William G., to Gulf Research & Development Company. Process for recovering carbonaceous organic material from a subterranean formation. 4,250,964, Cl. 166-303.000.

Jih, Chentung R., to International Business Machines Corporation. Optical character recognition using baseline information. 4,251,799, Cl. 340-146.30H.

Jin, Sungho, to Bell Telephone Laboratories, Incorporated. Magnetically anisotropic alloys by deformation processing. 4,251,293, Cl. 148-101.000.

Jinno, Naoyoshi: *See—*
Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shin-Ichi; and Tohoma, Wataru, 4,251,651, Cl. 526-204.000.

Joby, Michael J., to Lucas Industries Limited. Digital computing apparatus particularly for controlling a gas turbine engine. 4,251,873, Cl. 364-741.000.

Joffrion, Ralph K., to Copolymer Rubber & Chemical Corporation. Polar resins having improved characteristics by blending with EPM and EPDM polymers. 4,251,644, Cl. 525-64.000.

Johannes Heidenhain GmbH: *See—*
Spies, Alfons, 4,251,119, Cl. 308-9.000.

John, Joseph: *See—*
Vagelatos, Nicholas; Steinman, Donald K.; John, Joseph; and Young, Jack C., 4,251,724, Cl. 250-264.000.

Johne, Hans; and Jentzsch, Arndt, to Veb Polygraph Leipzig Kombinat fur Polygraphische Maschinen und Ausrustungen. Friction bearing for cylinders in a printing press. 4,251,121, Cl. 308-37.000.

Johns-Manville Corporation: *See—*
Ekdahl, Wendell G., 4,251,279, Cl. 106-50.000.
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased, 4,251,590, Cl. 428-285.000.

Johnson, Mark R. Shift actuator for a multi-speed transmission. 4,250,923, Cl. 137-625.690.

Johnson, Marvin F. L.; and Erickson, Henry, to Atlantic Richfield Company. Hydrocarbon hydrotreating process. 4,251,350, Cl. 208-216.00R.

Johnson, Paulette: *See—*
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,251,516, Cl. 424-180.000.

Johnson, Richard; and Steinberg, Meyer, to United States of America, Energy. Terpolymerization of ethylene, sulfur dioxide and carbon monoxide. 4,251,340, Cl. 204-159.110.

Johnson, Willard J. Rodenticides comprising 6-aminonicotinamide or 6-aminonicotinohydroxamic acid. 4,251,536, Cl. 424-266.000.

Johnston, Orin B. Heat bonding device. 4,251,314, Cl. 156-583.100.

Jones Medical Instrument Company: *See—*
Jones, William C.; and Harwood, Clifford, 4,250,890, Cl. 128-728.000.

Jones, William C.; and Harwood, Clifford, to Jones Medical Instrument Company. Pulmonary analyzer. 4,250,890, Cl. 128-728.000.

Jones, William W.: *See—*
Kelley, Charles K.; and Jones, William W., 4,251,169, Cl. 406-110.000.

Jonsson, Bo L. L.: *See—*
Larsson, Owe G. T.; Lindstrom, Rune H.; and Jonsson, Bo L. L., 4,251,266, Cl. 75-10.00R.

Josef Meissner GmbH & Co.: *See—*
Gebauer, Hans-Jurgen, 4,251,455, Cl. 260-467.000.

Joy Manufacturing Company: *See—*
Badino, Charles L., 4,251,376, Cl. 210-331.000.
Haynes, Charles W.; and Pitts, Adrian E., 4,250,773, Cl. 81-57.180.

Junginger, Erich: *See—*
Hertfelder, Wilhelm; and Junginger, Erich, 4,251,052, Cl. 251-129.000.

Kabushiki Kaisha Kito: *See—*
Suzuki, Noritoshi; Tsubokawa, Masakatsu; Bathum, Roy N., Jr.; and Selset, Ron S., 4,251,060, Cl. 254-356.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Morozumi, Shinji, 4,251,739, Cl. 307-238.000.

Kadoya, Tetsuo: *See—*
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,250,661, Cl. 47-58.000.

Kaeppel, Hanshelmut: *See—*
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.

Kaeppeli, Viktor, to Sandoz Ltd. Monoazo compounds having a thiazolium or substituted thiazolium diazo component radical and a 1,4-phenylene coupling component radical having a C_{1-4}alkyl group in each ortho position. 4,251,440, Cl. 260-146.00R.

Kahler, Otto: *See—*
Pfenninger, Billy J.; and Kahler, Otto, 4,250,970, Cl. 172-142.000.

Kajimoto, Hikokusu: *See—*
Ogura, Tsugitoshi; Hiraki, Akio; and Kajimoto, Hikokusu, 4,251,345, Cl. 208-8.0LE.

Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, to Nippon Telegraph and Telephone Public Corporation; and Hitachi, Ltd. Picture/audio signal transmission system. 4,251,691, Cl. 179-2.0TV.

Kalbitz, Wolfgang; Keyl, Erwin; Satzinger, Walter; and Wichert, Hans, to Siemens Aktiengesellschaft. Control desk for medical apparatus, in particular for an x-ray diagnostic apparatus. 4,251,850, Cl. 361-331.000.

Kamada, Takeshi: *See—*
Hara, Kazuyuki; and Kamada, Takeshi, 4,251,822, Cl. 346-139.00C.

Kaman Aerospace Corporation: *See—*
Hollrock, Richard H., 4,251,187, Cl. 416-134.00A.

Kamath, Bantval Y. Filter and system incorporating the filter for processing discrete samples of composite signals. 4,251,831, Cl. 358-21.00R.

Kamiyama, Toshibumi, to Matsushita Electric Industrial Co., Ltd. Under thread detection for sewing machines with axially spring biased rotatable member. 4,250,825, Cl. 112-278.000.

Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, to Kienzle Apparate GmbH. Form band alignment device for a form printer. 4,251,162, Cl. 400-613.100.

Kanai, Toshitaka: *See—*
Imaizumi, Fumio; Minato, Kazuo; and Kanai, Toshitaka, 4,251,199, Cl. 425-72.00R.

Kane, James: *See—*
Knop, Karl; and Kane, James, 4,251,137, Cl. 350-347.00V.

Kane, James F.: *See—*
Stratton, Claud L.; and Kane, James F., 4,251,265, Cl. 75-3.000.

Kaneko, Yoichi: *See—*
Kimura, Katsuhiro; Endo, Akira; Sekine, Kenji; Tanigami, Takahiko; and Kaneko, Yoichi, 4,251,817, Cl. 343-5.0DD.

Kaneko, Yoshikazu; Suzuka, Takashi; and Okuno, Tadahide, to Matsushita Electric Industrial Co., Ltd.; and West Electric Company, Ltd. Light angle indicator of photographic flash. 4,251,854, Cl. 362-5.000.

Kanesa Miso Kabushiki-Kaisha: *See—*
Kobayashi, Masakazu; Abo, Kenji; and Harashima, Koh, 4,251,558, Cl. 426-473.000.

Kanetsu Kogyo Kabushiki Kaisha: *See—*
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,251,791, Cl. 335-302.000.

Kano, Ichiro: *See—*
Suzki, Akiyoshi; and Kano, Ichiro, 4,251,129, Cl. 350-91.000.

Karl Lautenschlager KG, Mobelbeschlagfabrik: *See—*
Lautenschlager, Karl; and Lautenschlager, Gerhard W., 4,251,166, Cl. 403-402.000.

Karstensen, Karl W., to Caterpillar Tractor Co. Expansion control ring for a turbine shroud assembly. 4,251,185, Cl. 415-136.000.

Kart, Warren E.: *See—*
Toffolon, Roger L.; and Kart, Warren E., 4,251,196, Cl. 425-173.000.

Kasai Kogyo Kabushiki Kaisha: *See—*
Nagashima, Tsuneyasu; and Machida, Kazunori, 4,250,599, Cl. 24-216.000.

Kashakashvili, Guram V.: *See—*
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.

Kashio, Hidetora: *See—*
Kidoh, Kunizoh; Wakamori, Hideki; and Kashio, Hidetora, 4,251,405, Cl. 260-18.0PF.

Kasyanov, Grigory I.: *See—*
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D., 4,250,840, Cl. 122-6.00A.

Kasztreiner, Endre: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.

Kathawala, Faizulla G., to Sandoz, Inc. Alkyl diaryl sulfonium salts. 4,251,521, Cl. 424-185.000.

Kato Hatsujo Company Limited: *See—*
Aotani, Shigeo, 4,251,101, Cl. 296-93.000.

Kato Hatsujo Kabushiki Kaisha: *See—*
Nagashima, Tsuneyasu; and Machida, Kazunori, 4,250,599, Cl. 24-216.000.

Katshen, Bernard R. Roller furling structure. 4,250,826, Cl. 114-106.000.

Katsuki, Taichi: *See—*
Iyoki, Takeshi; Katsuki, Taichi; Mizokawa, Takumi; and Goto, Takaharu, 4,251,248, Cl. 62-21.000.

Katsura, Akira; Nakata, Kiyoshi; and Sakashi, Shoei, to Matsushita Electric Industrial Co., Ltd. Printer. 4,250,808, Cl. 101-93.150.

Kaufman, Robert J., to Monsanto Company. N-(Substituted carbonyl) derivatives of N-phosphinylmethylglycinates and the herbicidal use thereof. 4,251,258, Cl. 71-87.000.

Kaufmann, John H., to Global Coatings Limited. Roof coating composition and construction. 4,251,578, Cl. 428-53.000.

Kawabata, Hidetsugu; Nagata, Yuji; Ishiwatari, Keizo; and Shimizu, Toshio, to Matsushita Electric Industrial Co., Ltd. Method for manufacturing magnetic head using boronizing treatment. 4,251,297, Cl. 148-121.000.

Kawaguchi, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Disc brake apparatus. 4,250,979, Cl. 188-71.600.

Kawai, Hisasi: *See—*
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.

Kawai, Syuji: *See—*
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Kawai, Takashi, to Alps Electric Co., Ltd. Trimmer capacitor. 4,251,849, Cl. 361-278.000.

Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shin-Ichi; and Tohoma, Wataru, to Sumitomo Chemical Company, Limited. Amphoteric polyelectrolyte. 4,251,651, Cl. 526-204.000.

Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, to Hitachi, Ltd. Direct-heated cathode structure. 4,251,746, Cl. 313-345.000.

Kawasaki Steel Corporation: *See—*
Koshikawa, Takao; Ueda, Tunehiro; and Fukushima, Katsuji, 4,250,945, Cl. 164-86.000.

Kawneer Company, Inc.: *See—*
Hubbard, S. Eugene, 4,250,673, Cl. 52-211.000.

Kay-Ray, Inc.: *See—*
Wyatt, David M., 4,251,810, Cl. 340-612.000.

Kelley, Charles K.; and Jones, William W., to Charles K. Kelley and Sons Inc. Single line pneumatic tube system. 4,251,169, Cl. 406-110.000.

Kelley, Hugh D.: *See—*
Trammell, Edward L.; and Kelley, Hugh D., 4,250,987, Cl. 198-530.000.

Kellogg, Seeley C.; Peluso, Philip J.; and Bernardi, Richard B., to Picker Corporation. Frequency synthesizer apparatus and method in ultrasonic imaging. 4,251,779, Cl. 331-1.00A.

Kelly, Charles A.: *See—*
Irick, Gether, Jr.; and Kelly, Charles A., 4,251,433, Cl. 260-45.8NT.

Kelly, Thomas W.: *See—*
Rausch, Maurice K.; Erickson, Henry, deceased; Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., 4,251,347, Cl. 208-57.000.

Kemp, Frederick W. Soap and detergent cleaning compositions containing eucalyptus oil. 4,251,383, Cl. 252-118.000.

Kennedy-Skipton, Henry K.; and Robertson, Thomas, to Imperial Chemical Industries Limited. Fire resistant additive for hardenable resin compositions. 4,251,430, Cl. 260-40.00R.

Kenney, James W., to Drummond Scientific Co. Pipette. 4,250,755, Cl. 73-425.600.

Kerber, Hans: *See—*
Ebert, Hans; Kerber, Hans; and Queck, Robert, 4,251,682, Cl. 174-31.500.

Kerklies, Bodo: *See—*
Grundken, Dieter; and Kerklies, Bodo, 4,250,989, Cl. 198-729.000.

Kerr, Noell C.: *See—*
Gass, John C.; Kerr, Noell C.; and Pittman, Robert W., 4,251,191, Cl. 417-111.000.

Kesling, Haven S., Jr., to Atlantic Richfield Company. Process for the preparation of aromatic urethanes. 4,251,667, Cl. 560-24.000.

Kessler, Rolf: *See—*
Meier, Gunter; and Kessler, Rolf, 4,250,824, Cl. 112-269.100.

Kewanee Industries: *See—*
Swift, Harold E.; Innes, Robert A.; and Adams, Phillip, 4,251,465, Cl. 564-479.000.

Keyl, Erwin: *See—*
Kalbitz, Wolfgang; Keyl, Erwin; Satzinger, Walter; and Wichert, Hans, 4,251,850, Cl. 361-331.000.

Kidd, Robert P.: *See—*
Booth, Jack J.; Branch, William C.; and Kidd, Robert P., 4,250,919, Cl. 137-607.000.

Kidoh, Kunizoh; Wakamori, Hideki; and Kashio, Hidetora, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing plasticized vinylidene chloride-vinyl chloride copolymer. 4,251,405, Cl. 260-18.0PF.

Kiechel, Jean-Rene: *See—*
Maurer, Gerard; and Kiechel, Jean-Rene, 4,251,529, Cl. 424-250.000.

Kienzle Apparate GmbH: *See—*
Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, 4,251,162, Cl. 400-613.100.

Kilb, Hermann: *See—*
Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, 4,251,162, Cl. 400-613.100.

Kilian, Alois: *See—*
Pobuda, Erhard; and Kilian, Alois, 4,251,062, Cl. 266-178.000.

Kim, Kwang Young: *See—*
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, to Nippon Paint Co., Ltd. Photo-sensitive composition for dry formation of image. 4,251,622, Cl. 430-332.000.

Kimura, Katsuhiro; Endo, Akira; Sekine, Kenji; Tanigami, Takahiko; and Kaneko, Yoichi, to Hitachi, Ltd. Microwave integrated circuit device for transmission/reception of a signal. 4,251,817, Cl. 343-5.0DD.

Kimura, Mitsuyuki, to Mamiya Koki Kabushiki Kaisha. Viewfinder mask orienting device in a camera. 4,251,149, Cl. 354-222.000.

Kimura, Tadashi, to Olympus Optical Co., Ltd. Albada finder incorporating a range finder. 4,251,158, Cl. 356-8.000.

Kimura, Takeo: *See—*
Shibasaki, Ichiro; Ohmura, Kaoru; and Kimura, Takeo, 4,251,795, Cl. 338-32.00R.

Kimura, Tsutomu, to Fuji Photo Film Co., Ltd. Character recording device. 4,251,821, Cl. 346-108.000.

Kin Hip Metal & Plastic Factory Ltd.: *See—*
Sun, Kin C., 4,251,004, Cl. 220-4.00R.

Kindall, Harvey L. Bee feeding apparatus. 4,250,581, Cl. 6-5.000.

Kindell, Jerry L.; and Flynn, Richard T., to Honeywell Information Systems Inc. Apparatus and method in a data processing system for manipulation of signal groups having boundaries not coinciding with boundaries of signal group storage space. 4,251,864, Cl. 364-200.000.

King, Eric G. Apparatus and method for forming steps in profiled sheets of material. 4,250,728, Cl. 72-177.000.

King Industries, Inc.: *See—*
Calbo, Leonard J., 4,251,665, Cl. 548-215.000.

King, Robert C., to Holiday Industries, Inc. In-line apparatus for dissolving a solid in a liquid. 4,250,910, Cl. 137-268.000.

Kinoshita, Kimio: *See—*
Sim, James W.; and Kinoshita, Kimio, 4,251,600, Cl. 429-12.000.

Kins Developments Limited: *See—*
Marchant, Ian M., 4,251,030, Cl. 238-347.000.

Kircher, Morton S., to Olin Corporation. Method and apparatus for controlled, low current start-up of one of a series of electrolytic cells. 4,251,334, Cl. 204-98.000.

Kirchmayr, Rudolf: *See—*
Felder, Louis; Kirchmayr, Rudolf; and Schmidt, Andreas, 4,251,341, Cl. 204-159.240.

Kirsch Company: *See—*
Ford, James A.; and Haarer, Steven R., 4,250,597, Cl. 24-132.00R.

Kishimoto, Shinzo: *See—*
Minamizono, Junji; Yoneyama, Masakazu; and Kishimoto, Shinzo, 4,251,626, Cl. 430-527.000.

Kitamoto, Tatsuji: *See—*
Masuyama, Kenichi; Kitamoto, Tatsuji; and Yamada, Yasuyuki, 4,251,843, Cl. 360-137.000.

Kitamura, Osamu: *See—*
Hara, Kunio; Kitamura, Osamu; and Yamaguchi, Katsuji, 4,250,596, Cl. 24-73.0HS.

Kitamura, Shuji; Watanabe, Masashi; and Nakayama, Michihiro, to Sumitomo Chemical Company, Limited. Process for producing coated seed. 4,250,660, Cl. 47-57.600.

Klanica, Andrew J.: *See—*
Ficner, Stanley A.; Klanica, Andrew J.; and Korenowski, Theodore F., 4,251,491, Cl. 423-185.000.

Klause, Gerhard: *See—*
Hoeft, Siegfried; and Klause, Gerhard, 4,251,703, Cl. 200-340.000.

Klebanow, Simon: *See—*
Brown, Jerald E., 4,250,582, Cl. 8-149.100.

Klein, Howard P.: *See—*
McEntire, Edward E.; Zimmerman, Robert L.; and Klein, Howard P., 4,251,637, Cl. 521-115.000.

Kleynjan, Cornelius: *See*—
Dry, Leonard J.; Kleynjan, Cornelius; and Beukes, Quintin J., 4,251,346, Cl. 208-10.000.
Klimek, John J.; Tesch, Charles L.; Feo, Ernest M.; and Lesky, Ronald W., to Methode Electronics, Inc. Method of producing multilayer backplane. 4,250,616, Cl. 29-830.000.
Klomp, Johannes T.; and Vrugt, Peter J., to U.S. Philips Corporation. Tools for the handling and shaping of glass. 4,251,254, Cl. 65-374.00R.
Kloostra, M. Leon: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,251,027, Cl. 236-49.000.
Klotzner, Winfried: *See*—
Jeenicke, Edmund; Klotzner, Winfried; Meichle, Clemens; Schenk, Manfred; and Gorille, Ingo, 4,250,858, Cl. 123-480.000.
Kluger, Michael A., to Bendix Corporation, The. Drum brake adjuster. 4,250,980, Cl. 188-79.50P.
Klyavin, Yanis K.: *See*—
Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y., 4,251,138, Cl. 350-357.000.
Knapp, Alfons. Cartridge faucet for hydraulic systems. 4,250,912, Cl. 137-315.000.
Kniprath, Elmar; Mrusek, Gerd; Priebe, Hermann; and Reppenhagen, Claus, to Nordeutsche Affinerie. Process for producing a copper sulfate solution. 4,251,489, Cl. 423-41.000.
Knodler, Jurgen, to Robert Bosch GmbH. Internal combustion engine ignition system test apparatus. 4,251,774, Cl. 324-384.000.
Knoll, Frank S. Method of treating refuse to separate valuable constituents. 4,251,353, Cl. 209-129.000.
Knoll International Inc.: *See*—
Presby, Benedict F., 4,250,676, Cl. 52-222.000.
Knop, Karl; and Kane, James, to RCA Corporation. Tunable diffractive subtractive filter. 4,251,137, Cl. 350-347.00V.
Knor, Bernhard; Payrhammer, Bernd; and Wahl, Helmut, to AGFA-Gevaert, A.G. Apparatus for selecting originals for copying. 4,251,157, Cl. 355-68.000.
Knox, Kilbourne H.; and Bluhm, Stanley R., to Crane Co. Hydraulic braking system. 4,251,115, Cl. 303-10.000.
Knox, Lloyd C.: *See*—
Streich, Steven G.; and Knox, Lloyd C., 4,250,966, Cl. 166-328.000.
Knud Simonsen Industries Limited: *See*—
Jespersen, Knud; Bergner, Hans L.; and Buller-Colthurst, Guy E., 4,250,917, Cl. 137-563.000.
Knuth, Kenneth V.; and Walton, Charles E., II, to Burroughs Corporation. Apparatus for mounting electronic components on a printed circuit board. 4,250,615, Cl. 29-741.000.
Kobashi, Kiyoshi: *See*—
Kohama, Tokio; Matsui, Takeshi; N.shimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Kobayashi, Masakazu; Abo, Kenji; and Harashima, Koh, to Kanesa Miso Kabushiki-Kaisha. Method of making granular bean paste. 4,251,558, Cl. 426-473.000.
Kobayashi, Osamu; Yukimoto, Kohji; and Hayashi, Hiroshi, to Nippon Coinco Co., Ltd. Coin dispensing machine. 4,250,905, Cl. 133-5.00R.
Kobayashi, Tadahiro: *See*—
Inoue, Akio; Kobayashi, Tadahiro; and Iwasa, Toshio, 4,251,605, Cl. 429-145.000.
Kobayashi, Toshiaki, to Kyotaru Co., Ltd. Seasoned rice rolled in laver. 4,251,553, Cl. 426-115.000.
Kobayashi, Yoshiyuki; and Nakamura, Tamio, to Central Glass Company, Limited. Process of preparing high purity cryolite from fluoride solution containing dissolved silica. 4,251,501, Cl. 423-465.000.
Kobe, Inc.: *See*—
Budrys, Vitolis, 4,251,184, Cl. 415-89.000.
Kobe Steel, Limited: *See*—
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; and Takehata, Tetsuro, 4,251,202, Cl. 425-461.000.
Iyoki, Takeshi; Katsuki, Taichi; Mizokawa, Takumi; and Goto, Takaharu, 4,251,248, Cl. 62-21.000.
Kobtsev, Boris A.: *See*—
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.
Kochhar, Rajindar K.: *See*—
Gilbert, Ronald E.; and Kochhar, Rajindar K., 4,251,389, Cl. 252-429.00B.
Kocourek, Jan: *See*—
Coupek, Jiri; Filka, Karel; and Kocourek, Jan, 4,251,634, Cl. 521-84.000.
Koda, Hirokazu: *See*—
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, to Sekisui Kagaku Kogyo K.K. Agricultural covering multilayer film or sheet structure and method for thermal insulation. 4,250,661, Cl. 47-58.000.
Koehler, Michael; and Petry, Wolfgang, to Bleistahl G.m.b.H. Metal powder composition. 4,251,274, Cl. 75-252.000.
Koerckel, Gerard J.: *See*—
Arcidiacono, Frank R.; and Koerckel, Gerard J., 4,251,326, Cl. 204-15.000.
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, to Nippon Soken, Inc.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Electronic control system for carburetor. 4,250,855, Cl. 123-438.000.
Kohn, Harold B.: *See*—
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,251,378, Cl. 210-522.000.
Koke, Wilfried: *See*—
Weissner, Rudiger; Koke, Wilfried; and Hoffmann, Gunter, 4,251,091, Cl. 280-804.000.
Kolb, William P., to Hughes Aircraft Company. Starting circuit for a split section gas discharge laser. 4,251,751, Cl. 315-171.000.
Kolesnikov, Valery Y.: *See*—
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.
Koller, Stefan: *See*—
Loew, Peter; Zink, Rudolf; and Koller, Stefan, 4,251,656, Cl. 542-417.000.
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, to Hoffmann-La Roche Inc. Benzylpyrimidines. 4,251,454, Cl. 260-465.00E.
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, to Canon Kabushiki Kaisha; and Denshi Kabushiki Kaisha. High speed printer with stain preventing member between alternately spaced hammers. 4,250,807, Cl. 101-93.090.
Kondo, Isao, to Olympus Optical Co., Ltd. Power supply circuit for strobo unit. 4,251,753, Cl. 315-219.000.
Kondo, Nobuhiro: *See*—
Matsuoka, Hideaki; and Kondo, Nobuhiro, 4,250,710, Cl. 60-602.000.
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A. Process for purification of the off-gases resulting from the production of benzoyl chloride from phosgene. 4,251,457, Cl. 260-544.00K.
Konishiroku Photo Industry Co., Ltd.: *See*—
Kurita, Yoshio, 4,251,619, Cl. 430-292.000.
Kontarinis, Andreas: *See*—
Hohne, Per; Kontarinis, Andreas; and Titel, Siegfried, 4,251,023, Cl. 233-1.00R.
Kopf, Rowland J., to Densicon Associates. Method and apparatus for testing hardness of homogeneous materials. 4,250,742, Cl. 73-82.000.
Koppe, Volker: *See*—
Hausberg, Hans-Heinrich; Koppe, Volker; Poetsch, Eike; Saiko, Otto; and Seyfried, Christoph, 4,251,538, Cl. 424-267.000.
Korber, Alfred: *See*—
Bauer, Kurt; Korber, Alfred; and Bork, Karl-Heinz, 4,251,448, Cl. 260-340.200.
Korenaga, Itsuo, to Hitachi Metals, Ltd. Method of processing roll. 4,250,606, Cl. 29-148.40D.
Korenowski, Theodore F.: *See*—
Ficner, Stanley A.; Klanica, Andrew J.; and Korenowski, Theodore F., 4,251,491, Cl. 423-185.000.
Korn, Gerhard. Collapsable swim fin. 4,250,584, Cl. 9-304.000.
Korobkov, Vladlen V.: *See*—
Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,251,113, Cl. 299-69.000.
Kosa, Edit: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Kosan Crisplant A/S: *See*—
Lorenzen, Peder; Nielsen, Jacob A.; and Prydtz, Ole, 4,250,690, Cl. 53-475.000.
Koshikawa, Takao; Ueda, Tunehiro; and Fukushima, Katsuji, to Kawasaki Steel Corporation. Method of sequential continuous-casting of different grades of steel. 4,250,945, Cl. 164-86.000.
Koshio, Takeshi: *See*—
Tanigaki, Takashi; Koshio, Takeshi; and Otawa, Motohiro, 4,251,711, Cl. 219-146.240.
Kosuge, Wataru: *See*—
Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, 4,251,691, Cl. 179-2.0TV.
Kotlyar, Viktor D.: *See*—
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D., 4,250,840, Cl. 122-6.00A.
Kozy, Nikolai M.: *See*—
Brovman, Mikhail Y.; Marchenko, Ivan K.; Kozy, Nikolai M.; Efimov, Viktor A.; and Yakobshe, Richard Y., 4,250,949, Cl. 164-425.000.
Kraft, Karl: *See*—
Recker, Klaus; Reinecke, Gerd; and Kraft, Karl, 4,251,428, Cl. 260-37.00N.
Kraftwerk Union Aktiengesellschaft: *See*—
Bruckner, Hermann; and Emsperger, Werner, 4,250,704, Cl. 60-39.120.
Hoffmann, Jurgen, 4,250,916, Cl. 137-514.500.
Kramer, Wolfgang: *See*—
Brandes, Wilhelm; Frohberger, Paul-Ernst; Scheinpflug, Hans; and Kramer, Wolfgang, 4,251,512, Cl. 424-164.000.
Kranz, Max L., to Robertshaw Controls Company. Emergency life support system. 4,250,876, Cl. 128-202.220.
Kratz, David W. Chemical feeder with disposable chemical container. 4,250,911, Cl. 137-268.000.

Kraus, Peter: *See*—
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, 4,251,540, Cl. 424-273.00R.
Krause Plow Corporation: *See*—
Pfenninger, Billy J.; and Kahler, Otto, 4,250,970, Cl. 172-142.000.
Krause, Rolf, to Geb. Eickhoff Maschinenfabrik und Eisengiesserei m.b.H. Apparatus for pivotally positioning a clearing shield for a drum-cutter mining machine. 4,251,112, Cl. 299-45.000.
Krause, Walter. Storage vessel. 4,251,013, Cl. 222-198.000.
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, to Aluminiumipari Tervezo es Kutato Intezet. Self-adjusting powder distributor. 4,250,774, Cl. 432-15.000.
Krbechek, Leroy O., to Henkel Corporation. Nitrogen transhalogenation process. 4,251,450, Cl. 260-397.100.
Kreider, Arthur K.: *See*—
Remlinger, George W.; and Kreider, Arthur K., 4,250,954, Cl. 165-1.000.
Kress, Robert W. Ducted fan for model aircraft. 4,250,658, Cl. 46-76.00A.
Krjuchkov, Vasily V.: *See*—
Voronkov, Mikhail G.; Trofimov, Boris A.; Krjuchkov, Vasily V.; Amosova, Svetlana V.; Skvortsov, Jury M.; Volkov, Anatoly N.; Malkina, Anastasia G.; and Mushy, Roman Y., 4,251,666, Cl. 549-29.000.
Krobel, Heinz: *See*—
Bauer, Walter; Krobel, Heinz; and Farber, Heinrich, 4,251,150, Cl. 354-281.000.
Kroenig, Hans E. K., to Dufrit Kartoffel Verarbeitung Kroenig GmbH & Co. KG. Method and system for processing potatoes. 4,251,555, Cl. 426-231.000.
Krupicka, Gerald A. Golfing aid. 4,251,076, Cl. 273-183.00B.
Krutsch, John R.: *See*—
Barlow, Gordon A.; Krutsch, John R.; and Zidman, Michael J., 4,250,656, Cl. 46-44.000.
Krysiak, Janusz D. Extrusion apparatus. 4,251,201, Cl. 425-132.000.
Kubo, Kanji: *See*—
Momose, Tsugio; Fujita, Akira; and Kubo, Kanji, 4,251,859, Cl. 364-200.000.
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, to Yamanouchi Pharmaceutical Co., Ltd. Nitrogen-containing heterocyclic compounds. 4,251,533, Cl. 424-256.000.
Kubota, Hitoshi; and Yoshizawa, Katsuyuki, to Nissan Motor Company, Limited. Hydraulic pressure control valve for double piping braking system. 4,251,117, Cl. 303-24.00F.
Kubota, Ltd.: *See*—
Nishikawa, Munehiro, 4,250,928, Cl. 138-113.000.
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D. Blast furnace cooling arrangement. 4,250,840, Cl. 122-6.00A.
Kuechler, Irvin R. Apparatus and method for removing fumes from the space above a cooking appliance in a restaurant. 4,250,870, Cl. 126-299.00D.
Kuhl, Manfred: *See*—
Feller, Otto; Kuhl, Manfred; and Skrobek, Alois, 4,250,779, Cl. 82-18.000.
Kulagin, Rim A.: *See*—
Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P., 4,251,113, Cl. 299-69.000.
Kumazawa, Tetsuo: *See*—
Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.
Kummler, Ralph H.: *See*—
Leffert, Charles B.; Kummler, Ralph H.; and Piccirelli, Robert A., 4,251,339, Cl. 204-157.10H.
KUNDO-Kieninger & Obergfell: *See*—
Scheer, Erich, 4,251,877, Cl. 368-251.000.
Kunishima, Dennis H.: *See*—
Simon, Timothy M.; and Kunishima, Dennis H., 4,251,366, Cl. 210-767.000.
Kuno, Akira: *See*—
Matsui, Takeshi; Kuno, Akira; and Shinoda, Yoshio, 4,250,854, Cl. 123-352.000.
Kuraray Co., Ltd.: *See*—
Harada, Kazuto; and Yoshitake, Toshihiko, 4,251,643, Cl. 525-51.000.
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.
Kureha Kagaku Kogyo Kabushiki Kaisha: *See*—
Kidoh, Kunizoh; Wakamori, Hideki; and Kashio, Hidetora, 4,251,405, Cl. 260-18.0PF.
Kurita Machinery Manufacturing Co., Ltd.: *See*—
Nakamura, Masayuki, 4,251,373, Cl. 210-225.000.
Kurita, Yoshio, to Konishiroku Photo Industry Co., Ltd. Process for forming photo-polymeric image. 4,251,619, Cl. 430-292.000.
Kurkov, Victor P., to Chevron Research Company. Continuous preparation of chloroacetone. 4,251,467, Cl. 568-393.000.
Kurokawa, Nobuo: *See*—
Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, 4,251,195, Cl. 425-6.000.
Kurth Malting Corporation: *See*—
Pratt, George W.; Chapple, Thomas W.; and Fahy, Michael J., 4,251,630, Cl. 435-98.000.
Kyotaru Co., Ltd.: *See*—
Kobayashi, Toshiaki, 4,251,553, Cl. 426-115.000.
Uno, Koki; and Youda, Hirohumi, 4,251,552, Cl. 426-115.000.
La Soudure Autogene Francaise: *See*—
Corcelle, Francois; and Comane, Jean M., 4,251,708, Cl. 219-121.0EM.
La Bate, Michael D. Process for treating coke oven doors and jambs to prevent the build up of tar thereon. 4,251,322, Cl. 201-2.000.
Laby, Ralph H., to Commonwealth Scientific and Industrial Research Organization. Controlled-release compositions for administration of therapeutic agents to ruminants. 4,251,506, Cl. 424-19.000.
LaFarge Conseils et Etudes: *See*—
Lovichi, Jean-Pierre; and Le Bras, Bernard, 4,251,208, Cl. 432-14.000.
Laforest, Pierre: *See*—
Gagnon, Pierre; and Laforest, Pierre, 4,250,863, Cl. 125-23.00C.
Lageer, Reginald; and Spector, George. Snow runners for shopping cart. 4,251,085, Cl. 280-10.000.
Lagzdons, Juris L.: *See*—
Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y., 4,251,138, Cl. 350-357.000.
Lai, John T.: *See*—
Son, Pyong-Nae; and Lai, John T., 4,251,435, Cl. 260-45.8NE.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Corcelle, Francois; and Comane, Jean M., 4,251,708, Cl. 219-121.0EM.
Lam, Bing L.; Mendelson, Wilford L.; and Spainhour, Charles B., Jr., to SmithKline Corporation. Method for preparing tetrahydroisoquinolines. 4,251,660, Cl. 546-150.000.
Lamboo, Theodorus F.: *See*—
Bouwhuis, Gijsbertus; and Lamboo, Theodorus F., 4,251,160, Cl. 356-401.000.
Lamic, Jackie G.: *See*—
Zante, Hubert A.; Pascal, Pierre B.; Schilling, Michel E.; and Lamic, Jackie G., 4,250,705, Cl. 60-225.000.
Lander, Victor A., to Blonder-Tongue Laboratories, Inc. Corner reflector circularly polarized antenna. 4,251,818, Cl. 343-819.000.
Landfors, Arthur A., to Varian Associates, Inc. Electric heater assembly for diffusion pumps. 4,251,713, Cl. 219-275.000.
Lane, Russell W.: *See*—
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 4,251,219, Cl. 23-230.00R.
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 4,251,220, Cl. 23-230.00R.
Lang, Sidney B.: *See*—
Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, 4,250,894, Cl. 128-774.000.
Lapinsky, Ronald L.: *See*—
Fraley, Phillip E.; and Lapinsky, Ronald L., 4,251,621, Cl. 430-312.000.
Larsen, Harold S.: *See*—
Struckman, Edmund E.; and Larsen, Harold S., 4,250,907, Cl. 137-1.000.
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H. Apparatus for and method of determining contaminants on low pressure condensate. 4,251,219, Cl. 23-230.00R.
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H. Apparatus for and method of determining high pressure, high temperature feedwater contaminants. 4,251,220, Cl. 23-230.00R.
Larson, Willis A.: *See*—
Oughton, Ray L., Jr.; and Larson, Willis A., 4,251,683, Cl. 174-74.00R.
Larsson, Ingemar: *See*—
Jakobsson, Per; and Larsson, Ingemar, 4,250,947, Cl. 164-138.000.
Larsson, Owe G. T.; Lindstrom, Rune H.; and Jonsson, Bo L. L., to Uddeholms Aktiebolag. Method for taking care of metallic waste products by remelting. 4,251,266, Cl. 75-10.00R.
Laurel Bank Machine Co., Ltd.: *See*—
Uchida, Isamu, 4,250,692, Cl. 53-528.000.
Uchida, Isamu; Uchida, Shinya; and Ohsako, Kyoichi, 4,251,867, Cl. 364-408.000.
Lauria, Francesco: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
Lautenschlager, Friedrich W., to Vereinigte Kesselwerke AG. Process and apparatus for operating a firebox with solid gasifiable fuel having poor kindling properties and low volatile gas contents. 4,250,820, Cl. 110-347.000.
Lautenschlager, Gerhard W.: *See*—
Lautenschlager, Karl; and Lautenschlager, Gerhard W., 4,251,166, Cl. 403-402.000.
Lautenschlager, Karl; and Lautenschlager, Gerhard W., to Karl Lautenschlager KG, Mobelbeschlagfabrik. Miter joint binder for moldings. 4,251,166, Cl. 403-402.000.
Lazar, Harold. Electronic compass. 4,250,626, Cl. 33-363.00R.
Leach, David W.: *See*—
Fowler, Raymond L.; Leach, David W.; and Sloan, Lowell T., 4,250,810, Cl. 101-410.000.

Leaute, Robert, to Seguin et Cie. Substance designed to be used in the production of alcoholic liquids and process. 4,251,668, Cl. 560-69.000.
Le Bras, Bernard: *See—*
Lovichi, Jean-Pierre; and Le Bras, Bernard, 4,251,208, Cl. 432-14.000.
Lechler GmbH & Co. KG: *See—*
Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, 4,250,951, Cl. 164-444.000.
Le Coent, Jean-Louis; and Demoures, Bernard, to Orogil. Detergent-dispersants of high alkalinity for lubricating oils and process for their preparation. 4,251,379, Cl. 252-33.000.
Lee, David. Elevating roofs. 4,251,102, Cl. 296-160.000.
Lee, Eric C.; Lynam, Peter H.; Theobald, Laurence J. A.; and Wyeth, Harold W., to Ciba-Geigy Corporation. Fire protection means. 4,251,579, Cl. 428-73.000.
Lee, Len F.: *See—*
Howe, Robert K.; and Lee, Len F., 4,251,261, Cl. 71-90.000.
Lees, Sidney, to Forsyth Dental Infirmary for Children. Periodontal probe. 4,250,895, Cl. 128-776.000.
Leffert, Charles B.; Kummler, Ralph H.; and Piccirelli, Robert A., to Texas Gas Transmission Corporation. Thermally driven $C(S)+CO_2 \rightarrow 2CO$ reaction with high energy neutron sources. 4,251,339, Cl. 204-157.10H.
LeGrand, Charles G. G. R.; and Paul, Roger A. E. C. Method for producing an edible gel. 4,251,562, Cl. 426-573.000.
Legrand, Paul J., to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Support device for measuring instruments in the air intake of a turbojet. 4,250,743, Cl. 73-115.000.
Leif, Robert C. Swinging buckets. 4,250,830, Cl. 118-52.000.
Leinonen, Pertti: *See—*
Jarvenpaa, Kauko; Leinonen, Pertti; and Raisanen, Jouko, 4,250,627, Cl. 33-364.000.
Leistner, Gerhard: *See—*
Bauer, Alexander; Leistner, Gerhard; Muller, Gerhard; and Sell, Gunther, 4,251,371, Cl. 210-197.000.
Le Mair, Willem; and Vereijken, Antonius N. C., to U.S. Philips Corporation. Mobile data communication system. 4,251,801, Cl. 340-147.0SY.
Lemelson, Jerome H. Button assembly apparatus. 4,251,311, Cl. 156-380.000.
Lenke, Dieter: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.
Leonard, James H.; and Henderson, Courtland M., to Site-Tac, Inc. Method of coating, locating and maintaining ophthalmic supports of eyewear properly positioned with respect to the eyes on the bridge of the nose of the wearer. 4,251,302, Cl. 156-60.000.
Leong, David S.; and Levit, Vitaly N., to Templeton, Kenly & Company. Jack construction. 4,251,055, Cl. 254-2.00B.
Leopold Kostal, Firma: *See—*
Speidel, Volker; Bergmann, Eduard; and Worlitz, Lothar, 4,251,723, Cl. 250-229.000.
Lerch, Kurt: *See—*
Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, 4,250,951, Cl. 164-444.000.
Lerch, Ulrich: *See—*
Beck, Gerhard; Bartmann, Wilhelm; Lerch, Ulrich; and Schokens, Bernward, 4,251,669, Cl. 560-121.000.
Lermann, Peter; Wagensonner, Eduard; and Ruf, Wolfgang, to AGFA-Gevaert, A.G. Light totalizing system for photographic camera provided with a shutter-diaphragm. 4,251,142, Cl. 354-23.00D.
Lermann, Peter: *See—*
Stemme, Otto; Cocron, Istvan; and Lermann, Peter, 4,251,143, Cl. 354-25.000.
Leseberg, Helen M. Supine exercise device. 4,251,070, Cl. 272-126.000.
Lesky, Ronald W.: *See—*
Klimek, John J.; Tesch, Charles L.; Feo, Ernest M.; and Lesky, Ronald W., 4,250,616, Cl. 29-830.000.
Leslie Co.: *See—*
Scull, William L., 4,250,913, Cl. 137-488.000.
Levason, William: *See—*
McAuliffe, Charles A.; Levason, William; and McCullough, Francis P., 4,251,452, Cl. 260-429.00R.
Levin, Kenneth M. Heartbeat occurrence detector. 4,250,889, Cl. 128-708.000.
Levine, Alfred B. Multiplexed photocopier system with detachable portable optical reader and memory. 4,251,153, Cl. 355-3.00R.
Levit, Vitaly N.: *See—*
Leong, David S.; and Levit, Vitaly N., 4,251,055, Cl. 254-2.00B.
Lewis, Donald C. Lumber conditioning kiln. 4,250,629, Cl. 34-13.800.
Lewis, Walter E.; and Hurko, Bohdan, to General Electric Company. Self-cleaning glass-ceramic surface cooking unit. 4,251,716, Cl. 219-446.000.
Leybold-Heraeus GmbH: *See—*
Grof, Helmut; Wamser, Anton; and Reimpell, Uwe, 4,251,678, Cl. 13-14.000.
Leyh, Joseph C., Jr.: *See—*
Burkwall, Morris P., Jr.; Leyh, Joseph C., Jr.; and Reagan, John G., 4,251,556, Cl. 426-332.000.
Lheureux, Philippe: *See—*
Baril, Jacques; Gaborieau, Jean-Yves; and Lheureux, Philippe, 4,250,727, Cl. 72-46.000.
Li, Chien C., to Allied Chemical Corporation. Absorption pairs of 1-chloro-2,2,2-trifluoroethane and furan-derivatives. 4,251,382, Cl. 252-69.000.
Libbey-Owens-Ford Company: *See—*
Herliczek, Siegfried H.; and Thomas, Lazarus D., 4,251,572, Cl. 427-142.000.
Lichtblau, George J. Shielded balanced loop antennas for electronic security systems. 4,251,808, Cl. 340-572.000.
Liggett, James J. Fish bait and methods for its preparation. 4,251,547, Cl. 426-1.000.
Lillbacka, Jorma; and Rintala, Esa. Machine for pressing hose couplings onto hoses. 4,250,607, Cl. 29-237.000.
Lim, Franklin; and Moss, Richard D., to Damon Corporation. Process for preparing semipermeable microcapsules. 4,251,387, Cl. 252-316.000.
Lindstrom, Rune H.: *See—*
Larsson, Owe G. T.; Lindstrom, Rune H.; and Jonsson, Bo L. L., 4,251,266, Cl. 75-10.00R.
Lingenfelder, Ottmar. Method and apparatus for inserting filled, bag-like containers into boxes, cartons or the like. 4,250,688, Cl. 53-438.000.
Linnemann, Friedrich. Thread lasted shoes. 4,250,638, Cl. 36-11.000.
Liquid Paper Corporation: *See—*
Ferree, William I., Jr.; and Nguyen, Giao V., 4,251,276, Cl. 106-27.000.
Lischinski, Peter: *See—*
Schnall, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, 4,251,155, Cl. 355-15.000.
Little, William E., to Caterpillar Tractor Co. Joint seal having force transfer ring. 4,251,082, Cl. 277-87.000.
Liu, Hsin-Tuan; Perrone, George L.; and Gambee, Leo E., to Garrett Corp., The. Crossover duct assembly. 4,251,183, Cl. 415-198.100.
Liu, Ping Y., to General Electric Company. Ternary polycarbonate compositions. 4,251,647, Cl. 525-91.000.
Livingston, David R., to Texaco Development Corporation. Process for reducing acid impurity levels in N-(tertiaryaminoalkyl)acrylamide production. 4,251,461, Cl. 564-204.000.
Lochner, Kaspar. Pasty damping agent dispersion. 4,251,381, Cl. 252-62.000.
Lodge, James A., to E M I Limited. Rotary drive mechanisms. 4,250,761, Cl. 74-84.00R.
Loed Corporation: *See—*
Drott, Edward R.; Christenson, John C.; and Rathke, Ralph E., 4,251,181, Cl. 414-723.000.
Loeffler, Carolyn R., personal representative: *See—*
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased, 4,251,590, Cl. 428-285.000.
Loeffler, Romain E., deceased: *See—*
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased, 4,251,590, Cl. 428-285.000.
Loew, Peter; Zink, Rudolf; and Koller, Stefan, to Ciba-Geigy Corporation. Cationic dyes. 4,251,656, Cl. 542-417.000.
Logan, Michael M. Image projecting device. 4,251,856, Cl. 362-232.000.
Login, Robert B.; and Dutton, Daniel R., to BASF Wyandotte Corporation. Polyester-starch sized paper, sizing composition, and process therefor. 4,251,402, Cl. 260-9.000.
Longo, John M.; and Cull, Neville L., to Exxon Research & Engineering Co. Process for the removal of SO_x and NO_x from gaseous mixture containing the same. 4,251,496, Cl. 423-239.00A.
Lopez, Eugene F.: *See—*
Campbell, Bruce D.; and Lopez, Eugene F., 4,251,304, Cl. 156-85.000.
Loram Maintenance of Way: *See—*
Trottochau, Lawrence D., 4,250,812, Cl. 104-2.000.
Lord, Harold: *See—*
Pearson, Frank K.; and Lord, Harold, 4,251,846, Cl. 361-30.000.
Lorenz, Joachim: *See—*
Zinke, Horst; and Lorenz, Joachim, 4,251,469, Cl. 260-942.000.
Lorenzen, Peder; Nielsen, Jacob A.; and Prydtz, Ole, to Kosan Crisplant A/S. Container loading systems. 4,250,690, Cl. 53-475.000.
Lorenzini, Robert A. Carrying case. 4,250,995, Cl. 206-314.000.
Loschilin, Evgeny D.: *See—*
Galperin, Alexandr L.; Onikov, Eduard A.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,250,932, Cl. 139-436.000.
Lotte Co. Ltd.: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Ishikawa, Hisashi, 4,251,548, Cl. 426-3.000.
Lovelace, Bruce G.: *See—*
Bargeron, Kim G.; Hormel, Thad S.; Winegardner, David K.; and Lovelace, Bruce G., 4,251,459, Cl. 564-215.000.
Lovett, Richard N.: *See—*
Audeh, Costandi A.; and Lovett, Richard N., 4,250,739, Cl. 73-17.00A.
Lovichi, Jean-Pierre; and Le Bras, Bernard, to LaFarge Conseils et Etudes. Process and installations for transferring heat and their applications for the treatment of raw cement. 4,251,208, Cl. 432-14.000.
Lower, William E., to Rotex, Inc. Screening machine. 4,251,354, Cl. 209-240.000.
Loyd, Miles L. Wind driven apparatus for power generation. 4,251,040, Cl. 244-154.000.
Lucas, Ilse, to Siemens Aktiengesellschaft. Magnetic focusing and deflection system for electron beam tubes. 4,251,790, Cl. 335-213.000.
Lucas Industries Limited: *See—*
Joby, Michael J., 4,251,873, Cl. 364-741.000.
Wilson, Alexander J.; Margetts, Hugh G.; and Harvey, Geoffrey, 4,250,981, Cl. 188-327.000.
Lueneberg, Hartmut; Maennl, Reinhard; and Grillmeier, Alfred, to Schott-Ruhrglas GmbH. Packaged tubes or rods. 4,250,687, Cl. 53-435.000.

Lueschen, William K., to Brandt, Inc. Coin dispenser attachment. 4,250,904, Cl. 133-2.000.

Luetzelschwab, Roland C.; and Bartell, Patrick E., to Motorola, Inc. Apparatus for parallel combining an odd number of semiconductor devices. 4,251,784, Cl. 333-127.000.

Luft, Victor, to Honeywell Inc. Method of making electroded wafer for electro-optic devices. 4,250,603, Cl. 29-25.350.

Lumma, William C.: *See—*
Saari, Walfred S.; and Lumma, William C., 4,251,530, Cl. 424-250.000.

Lummus Company, The: *See—*
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,251,378, Cl. 210-522.000.

Lunden, John W.: *See—*
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Luntz, Richard D.: *See—*
Jacobsen, Stephen C.; Stenehjem, Jerome C.; Stephen, Robert L.; and Luntz, Richard D., 4,250,878, Cl. 128-207.210.

Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y. Method of producing solid electrochrome element. 4,251,138, Cl. 350-357.000.

Lutter, Edward P.: *See—*
Dodt, William C.; and Lutter, Edward P., 4,251,885, Cl. 371-60.000.

Lutz, Albert W.; and Diehl, Robert E., to American Cyanamid Company. 2,6-Dinitroaniline herbicides. 4,251,264, Cl. 71-105.000.

Lynam, Peter H.: *See—*
Lee, Eric C.; Lynam, Peter H.; Theobald, Laurence J. A.; and Wyeth, Harold W., 4,251,579, Cl. 428-73.000.

Lysenko, Evgeny E.: *See—*
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M. O. Sales Ltd.: *See—*
Woolley, George C., 4,251,086, Cl. 280-11.120.

Machida, Kazunori: *See—*
Nagashima, Tsuneyasu; and Machida, Kazunori, 4,250,599, Cl. 24-216.000.

Machurat, Jean; Morawski, Jean-Claude; and Vrisakis, Georges, to Rhone-Poulenc Industries. Synthetic amorphous silica for elastomeric reinforcement and methods therefor. 4,251,281, Cl. 106-288.00B.

Mackenzie, Roderick D. Animal identification tags. 4,250,643, Cl. 40-301.000.

MacKenzie, William G.; and Asaki, James T., to International Telephone and Telegraph Corporation. Compact telescoping telephone set. 4,251,696, Cl. 179-103.000.

Mackey, Francis P.: *See—*
Gallien, John P.; Mackey, Francis P.; Sadoski, Tadius T.; and Taubner, Fred R., 4,251,750, Cl. 313-487.000.

Mackey, Illa J., to Mesabi Jobbers, Inc. Blast hole liner. 4,250,811, Cl. 102-24.00R.

MacPhail, Alexander C. B.: *See—*
Carswell, William D.; Youd, Arthur; and MacPhail, Alexander C. B., 4,251,431, Cl. 252-40.700.

Madgavkar, Ajay M.; Vogel, Roger F.; and Swift, Harold E., to Gulf Research & Development Company. In situ combustion process for the recovery of liquid carbonaceous fuels from subterranean formations. 4,250,962, Cl. 166-256.000.

Maeda, Hiroshi: *See—*
Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, 4,251,195, Cl. 425-6.000.

Maennl, Reinhard: *See—*
Lueneberg, Hartmut; Maennl, Reinhard; and Grillmeier, Alfred, 4,250,687, Cl. 53-435.000.

Magee, Walter L.; and Bayer, Arthur C., to Stauffer Chemical Company. Process for producing a mixture of branched and linear carboxylic acid salts. 4,251,451, Cl. 260-413.000.

Mager, Eric L.; and Schreurs, Willy P., to GTE Products Corporation. Method of coating arc discharge lamp electrode. 4,251,569, Cl. 427-58.000.

Magill, William C.: *See—*
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased, 4,251,590, Cl. 428-285.000.

Magnier, Pierre: *See—*
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Magnum Industries, Inc.: *See—*
Sons, Mack D.; and Schlegel, William F., 4,251,005, Cl. 220-22.000.

Magnusson, Gunnar B.: *See—*
Helgesson, Anders T.; Magnusson, Gunnar B.; and Sederholm, Johan F., 4,250,935, Cl. 144-2.0AA.

Mago, Gyula A. Cellular network of processors. 4,251,861, Cl. 364-200.000.

Maier, Roland: *See—*
Niklaus, Bernd; Braun, Manfred; and Maier, Roland, 4,250,765, Cl. 74-388.0PS.

Makarewicz, Stanley R.: *See—*
Garbarino, Paul L.; Makarewicz, Stanley R.; and Shepard, Joseph F., 4,251,571, Cl. 427-89.000.

Makino, Masayasu: *See—*
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.

Malkina, Anastasia G.: *See—*
Voronkov, Mikhail G.; Trofimov, Boris A.; Krjuchkov, Vasily V.; Amosova, Svetlana V.; Skvortsov, Jury M.; Volkov, Anatoly N.; Malkina, Anastasia G.; and Mushy, Roman Y., 4,251,666, Cl. 549-29.000.

Mamiya Koki Kabushiki Kaisha: *See—*
Kimura, Mitsuyuki, 4,251,149, Cl. 354-222.000.

Maniglia, Carmelo, to Riganti, Luciano. Creep preventing safety device for hydraulic jacks, especially of the type employed for partially or one-side raising road vehicles. 4,251,056, Cl. 254-8.00B.

Manizza, Guelfo A.; and Holmes, George S., to Federal Paper Board Company, Inc. Bottle carrier. 4,250,991, Cl. 206-158.000.

Mann, Debra K.: *See—*
Moore, Wayne R.; and Mann, Debra K., 4,251,518, Cl. 424-180.000.

Mannesmann AG: *See—*
Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, 4,250,951, Cl. 164-444.000.

Manning, Carl D.: *See—*
Scriven, L. Edward, II; Seeto, Yee; and Manning, Carl D., 4,250,741, Cl. 73-64.400.

Marcatili, Enrique A. J., to Bell Telephone Laboratories, Incorporated. Velocity matched optical gate. 4,251,130, Cl. 350-96.140.

Marchant, Ian M., to Kins Developments Limited. Rail clip assemblies. 4,251,030, Cl. 238-347.000.

Marchenko, Ivan K.: *See—*
Brovman, Mikhail Y.; Marchenko, Ivan K.; Kozy, Nikolai M.; Efimov, Viktor A.; and Yakobshe, Richard Y., 4,250,949, Cl. 164-425.000.

Marcocci, Guy D.: *See—*
Yablonski, Peter, 4,250,677, Cl. 52-233.000.

Margetts, Hugh G.: *See—*
Wilson, Alexander J.; Margetts, Hugh G.; and Harvey, Geoffrey, 4,250,981, Cl. 188-327.000.

Margolis, Geoffrey; and Chiovini, Jacky, to Societe d'Assistance Technique pour Produits Nestle S.A. Decaffeination process. 4,251,559, Cl. 426-490.000.

Marijon, Jean-Louis: *See—*
Debord, Pierre; and Marijon, Jean-Louis, 4,251,803, Cl. 340-347.0CC.

Marino, Jerry C.; and Fortini, Edward C., to Data General Corporation. Latch assembly. 4,251,095, Cl. 292-54.000.

Marjollet, Jacques: *See—*
Bessouat, Roger; Marjollet, Jacques; and Palacio, Gerard, 4,250,841, Cl. 122-483.000.

Mark, Harold W.; and Childs, William V., to Phillips Petroleum Company. Rapid hydrolysis of esters. 4,251,673, Cl. 568-858.000.

Mark, Victor; and Bostick, Edgar E., to General Electric Company. Flame retardant polycarbonate composition. 4,251,434, Cl. 260-45.8RW.

Marsden, Howard A.: *See—*
Haak, Willard J.; Marsden, Howard A.; and Mueller, James P., 4,250,794, Cl. 91-420.000.

Marsh, Christopher R.; and Russell, James A., to BP Chemicals Limited. Process for the removal of hydroxyacetone from phenol. 4,251,325, Cl. 203-2.000.

Marsh, Pamela S.: *See—*
Marsh, Thomas E.; and Marsh, Pamela S., 4,250,875, Cl. 128-82.000.

Marsh, Thomas E.; and Marsh, Pamela S. Canine ear strengthening and training device. 4,250,875, Cl. 128-82.000.

Marshall, Alan, to Ciba-Geigy Corporation. Purification process. 4,251,492, Cl. 423-226.000.

Marshall, Edward. Snap roller. 4,251,061, Cl. 254-390.000.

Marshall, Steven, to ACI Operations Pty. Ltd. Feeding apparatus. 4,250,691, Cl. 53-505.000.

Martens, Winand H.: *See—*
Bodenmann, Hans U.; Van Herle, Louis P.; Michel, Luc Y.; Martens, Winand H.; and Pins, Heinrich, 4,250,997, Cl. 206-528.000.

Martin, Barrie J.; Harvey, Dennis; and Stanwell, Peter, to Plessey Handel und Investments AG. Vibratory atomizer. 4,251,031, Cl. 239-102.000.

Martin, Eugene R., to SWS Silicones Corporation. Compositions containing thiofunctional polysiloxanes. 4,251,277, Cl. 106-38.220.

Martin, Gerard: *See—*
Chomel, Roger; Martin, Gerard; and Viallon, Georges, 4,251,186, Cl. 415-210.000.

Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, to Abbott Laboratories. 2-Deoxy-3-O-Demethylfortimicins. 4,251,516, Cl. 424-180.000.

Martin, Jon W., to TRW Inc. Method of providing curable fluoroelastomer gums having coupling agent coated particulate carbonaceous fillers. 4,251,432, Cl. 260-42.140.

Martinec, Richard C.; Berry, James I. and Stokes, Paul D., to Ford Motor Company. Liquid level measuring system. 4,250,750, Cl. 73-308.000.

Martinez, Pasquale: *See—*
Cavallino, Francesco; Martinez, Pasquale; Vaccaneo, Stefano; and Allione, Michele, 4,250,707, Cl. 60-293.000.
Cavallino, Francesco; Martinez, Pasquale; Schiavuzzi, Roberto; and Allione, Michele, 4,250,860, Cl. 123-587.000.

Martinic, Jack, to Bendix Corporation, The. Pressure limiter for hydraulic brake booster. 4,250,795, Cl. 91-445.000.

Maruyama, Sumiko: *See—*
Sugimori, Shiro; Goto, Tetsuro; and Maruyama, Sumiko, 4,251,147, Cl. 354-127.000.

Maruyama, Teruo; and Ichiyanagi, Takashi, to Matsushita Electric Industrial Co., Ltd. Rotary head assembly for magnetic recording and reproducing device. 4,251,840, Cl. 360-107.000.

Marvel Specialty Company, Inc.: *See*—
Harrill, John D., 4,250,723, Cl. 66-147.000.

Marver, James M.; and Olson, Wayne R., to Sperry Corporation. Sequential Galois multiplication in GF(2^n) with GF(2^m) Galois multiplication gates. 4,251,875, Cl. 364-754.000.

Marvin Glass & Associates: *See*—
Jaworski, Eugene; and Breslow, Jeffrey D., 4,251,075, Cl. 273-113.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Asphalt-coated glass fibers. 4,251,577, Cl. 428-378.000.

Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., to Owens-Corning Fiberglas Corporation. Road pavement and repair. 4,251,586, Cl. 428-220.000.

Masie, James R.; and Snyder, James J., to Park-Ohio Industries, Inc. Unit for induction heating and hardening gear teeth. 4,251,704, Cl. 219-10.590.

Masie, James R.: *See*—
Pusateri, James J.; and Masie, James R., 4,251,707, Cl. 219-10.790.

Maskenskov, Konstantin M.: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.

Massachusetts Institute of Technology: *See*—
Bush, Vannevar, 4,250,953, Cl. 165-1.000.

Mast, Kenrick H. Pipe unfreezer. 4,250,925, Cl. 138-35.000.

Masuyama, Kenichi; Kitamoto, Tatsuji; and Yamada, Yasuyuki, to Fuji Photo Film Co., Ltd. Disc jacket for retaining magnetic recording disc. 4,251,843, Cl. 360-137.000.

Mathews, James K., to Pertron Controls Corporation. Interface circuit for interconnecting an electronic controller to a resistance welding machine. 4,251,764, Cl. 323-320.000.

Matsuda, Motonobu; Matsui, Tohru; Nanba, Yasuhiro; and Tanaka, Yoshihiro, to Minolta Camera Kabushiki Kaisha. Rangefinding system. 4,251,144, Cl. 354-25.000.

Matsuda, Tadashi: *See*—
Mikami, Tomohisa; Matsuda, Tadashi; and Abe, Fumitaka, 4,251,825, Cl. 346-160.000.

Matsui, Goro: *See*—
Takedoi, Atushi; Horiishi, Nanao; Matsui, Goro; and Toda, Koji, 4,251,592, Cl. 428-403.000.

Matsui, Hirotoshi: *See*—
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.

Matsui, Ryuji: *See*—
Nakada, Hisao; Harada, Michisuke; Yamase, Yukio; and Matsui, Ryuji, 4,251,414, Cl. 260-297.0NR.

Matsui, Takeshi; Kuno, Akira; and Shinoda, Yoshio, to Nippon Soken, Inc. Speed control system for automotive vehicles. 4,250,854, Cl. 123-352.000.

Matsui, Takeshi: *See*—
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.

Matsui, Tohru: *See*—
Matsuda, Motonobu; Matsui, Tohru; Nanba, Yasuhiro; and Tanaka, Yoshihiro, 4,251,144, Cl. 354-25.000.

Matsukawa, Hiroharu: *See*—
Saeki, Keiso; Matsukawa, Hiroharu; and Satomura, Masato, 4,251,386, Cl. 252-316.000.

Matsumoto, Isao; Iwaki, Tsutomu; and Yanagihara, Nobuyuki, to Matsushita Electric Industrial Co., Ltd. Battery electrode. 4,251,603, Cl. 429-94.000.

Matsumura, Isao, to Canon Kabushiki Kaisha. Eye examining instrument. 4,251,139, Cl. 351-7.000.

Matsumura, Keiji: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Matsumura, Kuniaki: *See*—
Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, 4,251,195, Cl. 425-6.000.

Matsuoka, Hideaki; and Kondo, Nobuhiro, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Exhaust gas relief valve device. 4,250,710, Cl. 60-602.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kamiyama, Toshibumi, 4,250,825, Cl. 112-278.000.
Kaneko, Yoshikazu; Suzuka, Takashi; and Okuno, Tadahide, 4,251,854, Cl. 362-5.000.
Katsura, Akira; Nakata, Kiyoshi; and Sakashi, Shoei, 4,250,808, Cl. 101-93.150.
Kawabata, Hidetsugu; Nagata, Yuji; Ishiwatari, Keizo; and Shimizu, Toshio, 4,251,297, Cl. 148-121.000.
Maruyama, Teruo; and Ichiyanagi, Takashi, 4,251,840, Cl. 360-107.000.
Matsumoto, Isao; Iwaki, Tsutomu; and Yanagihara, Nobuyuki, 4,251,603, Cl. 429-94.000.

Matsushita Electric Works, Ltd.: *See*—
Ihara, Sinji, 4,250,902, Cl. 132-9.000.

Matthias, Klaus: *See*—
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.

Matthies, Paul: *See*—
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,251,653, Cl. 528-335.000.

Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,251,391, Cl. 252-439.000.

Mauldin, Charles H.; and Baird, William C., Jr., to Exxon Research & Engineering Co. Reforming with multimetallic catalysts. 4,251,392, Cl. 252-439.000.

Maurer, Gerard; and Kiechel, Jean-Rene, to Sandoz Ltd. Ergot peptide alkaloids. 4,251,529, Cl. 424-250.000.

Maus, Otfrid, to Schenck-Auto-Service-Gerate GmbH. Apparatus for balancing a rotating body. 4,250,756, Cl. 73-459.000.

Mautz, Karlheinz: *See*—
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, 4,251,188, Cl. 416-134.00A.

Maxson, Orwin G.: *See*—
Peterson, Marvin L.; and Maxson, Orwin G., 4,251,343, Cl. 204-197.000.

May, Paul; and Guerra, Luis R., to Gulf South Research Institute. Phosphonitrilic fluoroelastomer lined denture. 4,251,215, Cl. 433-168.000.

Mayer, Carl P.; and Rothenberg, Robert A., to Chomerics, Inc. Publications cover with display device. 4,251,734, Cl. 290-5.000.

Mayer, Jerome F.: *See*—
O'Rear, Dennis J.; and Mayer, Jerome F., 4,251,348, Cl. 208-61.000.

Mayer, Martin: *See*—
Barthruff, Otto; Mayer, Martin; and Sprenger, Martin, 4,251,788, Cl. 335-157.000.

Mayer, Wilfried J. W.: *See*—
Ginsburg, David; and Mayer, Wilfried J. W., 4,251,332, Cl. 204-59.00R.

Mayer, Wolfgang, to Siemens Aktiengesellschaft. Control unit having a memory in which a program consisting of command words is stored. 4,251,866, Cl. 364-200.000.

McAuliffe, Charles A.; Levason, William; and McCullough, Francis P., to National Research Development Corporation. Manganese (II) complexes. 4,251,452, Cl. 260-429.00R.

McCall, John M. 2-Benzothiepins and compositions and methods of use therefore. 4,251,526, Cl. 424-248.510.

McCartin, Peter J.; and Nebe, William J., to Du Pont de Nemours, E. I., and Company. Positive and negative working imaging systems from photoactive plastisols. 4,251,618, Cl. 430-270.000.

McClendon, William D. Heating and cooling apparatus for a building. 4,250,957, Cl. 165-45.000.

McCloskey, Albert R., to Incom International Inc. Self adjusting bearing assembly. 4,251,122, Cl. 308-72.000.

McClure, George R.; and Victorius, Claus, to Du Pont de Nemours, E. I., and Company. Epoxy resin powder primer compositions. 4,251,426, Cl. 260-37.0EP.

McCormick-Goodhart, Mark H.: *See*—
Cannella, Vincent D.; and McCormick-Goodhart, Mark H., 4,251,564, Cl. 427-1.000.

McCormick, Harold, to Ramsey Corporation. Ferrous metal body coated with an alloy formed by an iron/silicon extended molybdenum plasma spray powder. 4,251,599, Cl. 428-682.000.

McCoy, Charles S.; and Houston, Robert J., to Chevron Research Company. Fixed-bed reforming with mid-cycle catalyst addition. 4,251,349, Cl. 208-64.000.

McCullough, Francis P.: *See*—
McAuliffe, Charles A.; Levason, William; and McCullough, Francis P., 4,251,452, Cl. 260-429.00R.

McDonnell Douglas Corporation: *See*—
Satler, Walter I., 4,251,174, Cl. 409-137.000.

McDonough Manufacturing Company: *See*—
Detjen, Robert K., 4,250,937, Cl. 144-312.000.

McDougal, Thomas F. Quick set hydraulic vise. 4,251,065, Cl. 269-25.000.

McEntire, Edward E.; Zimmerman, Robert L.; and Klein, Howard P., to Texaco Development Corporation. Tertiary amino substituted oxazolidines as polyisocyanurate catalysts. 4,251,637, Cl. 521-115.000.

McGarry, Errol-James; Forsyth, Bruce A.; and Wilshire, Colin, to ICI Australia Limited. Process for killing internal helminths using certain 1,1-bis-(2-substituted-3-nitrophenyl)alkane or alkylene derivatives. 4,251,546, Cl. 424-347.000.

McGinnis, Edgar L.: *See*—
Carr, Norman L.; and McGinnis, Edgar L., 4,251,364, Cl. 210-777.000.

McInerney, Charles E., to Garrett Corp., The. Turbocharger control actuator. 4,251,050, Cl. 251-61.000.

McKenny, Vernon G.; and Chan, Tsiu C., to Mostek Corporation. Extremely low current load device for integrated circuit. 4,251,876, Cl. 365-182.000.

McLain, Philippe H., to Shakespeare Company. Filament winding apparatus for making fiber reinforced plastic members. 4,251,036, Cl. 242-7.210.

McLaughlin, Richard S.; and Moore, Jerome A. Security door assembly for an automatic document dispensing device. 4,251,009, Cl. 221-12.000.

McMillin, Danny L.; and Stirbis, James S., to Coors Container Company. Apparatus for printing cans from heat transfer paper. 4,250,831, Cl. 118-669.000.

McNally, John P. Automatic sealing apparatus for overhead doors. 4,250,941, Cl. 160-209.000.

McNaney, Joseph T. Message character image projection control system. 4,251,806, Cl. 340-373.300.

McNeilab, Inc.: *See*—
Scott, Malcolm K.; and Rasmussen, Chris R., 4,251,655, Cl. 542-415.000.

Mears, Shawn P., to United States of America, Air Force. Aircraft electrical system tester. 4,251,765, Cl. 324-51.000.

Meckler, Gershon, to Gershon Meckler Associates, P.C. Method for forming wiring channels in a concrete floor. 4,250,675, Cl. 52-221.000.

Medical Dynamics, Inc.: *See*—
Adair, Edwin L., 4,250,882, Cl. 128-275.000.

Medtronic, Inc.: *See*—
Hartlaub, Jerome T.; Smith, Bobby L.; and Powell, Richard M., 4,250,884, Cl. 128-419.0PT.
Thompson, David L., 4,250,883, Cl. 128-419.0PG.

Mego Corp.: *See*—
Meirovitz, Mordechai, 4,251,078, Cl. 273-265.000.

Mehl, Wolfgang; Hendriks, Dieter; and Decombe, Robert, to Sublistatic Holding SA. Process for formation of permanent image. 4,251,611, Cl. 430-42.000.

Meichle, Clemens: *See*—
Jeenicke, Edmund; Klotzner, Winfried; Meichle, Clemens; Schenk, Manfred; and Gorille, Ingo, 4,250,858, Cl. 123-480.000.

Meier, Gunter; and Kessler, Rolf, to Dorina Nahmaschinen GmbH. Method and device for forming an overcast seam with a zig-zag sewing machine. 4,250,824, Cl. 112-269.100.

Meier, Spencer I.: *See*—
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased, 4,251,590, Cl. 428-285.000.

Meirovitz, Mordechai, to Mego Corp. Guessing game. 4,251,078, Cl. 273-265.000.

Mello, Frank A. Sponge rollers and vacuum means for removing water from vehicle in a car wash. 4,250,591, Cl. 15-306.00B.

Meloni, Stefano, to Merloni Igienico Sanitari S.p.A. Plant for the production of thermal energy from the solar heat. 4,250,712, Cl. 62-2.000.

Memoli, Richard E.: *See*—
Riso, Rhea R.; and Memoli, Richard E., 4,250,886, Cl. 128-621.000.

Menard, Christian, to Thomson-CSF. Electronic ignition system and an internal combustion engine equipped with this system. 4,250,846, Cl. 123-414.000.

Mendelson, Wilford L.: *See*—
Lam, Bing L.; Mendelson, Wilford L.; and Spainhour, Charles B., Jr., 4,251,660, Cl. 546-150.000.

Merck & Co., Inc.: *See*—
Baldwin, John J.; and Ponticello, Gerald S., 4,251,663, Cl. 546-303.000.
Saari, Walfred S.; and Lumma, William C., 4,251,530, Cl. 424-250.000.

Merck Patent Gesellschaft mit beschrankter Haftung; *See*—
Hausberg, Hans-Heinrich; Koppe, Volker; Poetsch, Eike; Saiko, Otto; and Seyfried, Christoph, 4,251,538, Cl. 424-267.000.

Merloni Igienico Sanitari S.p.A.: *See*—
Meloni, Stefano, 4,250,712, Cl. 62-2.000.

Merritt, Leonard G., to Merrittstyle Products Limited. Propagator for growing and transplanting plants. 4,250,663, Cl. 47-73.000.

Merrittstyle Products Limited: *See*—
Merritt, Leonard G., 4,250,663, Cl. 47-73.000.

Mesabi Jobbers, Inc.: *See*—
Mackey, Illa J., 4,250,811, Cl. 102-24.00R.

Messer Griesheim GmbH: *See*—
Roeder, Georg; and Sachs, Helmut, 4,251,205, Cl. 431-263.000.

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Schwarz, Aiois; Mautz, Karlheinz; and Stephan, Michael, 4,251,188, Cl. 416-134.00A.

Meszaros, Anthony G.: *See*—
Foreman, Robert W.; and Meszaros, Anthony G., 4,251,292, Cl. 148-18.000.

Met-L-Parts, Inc.: *See*—
Funk, Charles E., 4,251,018, Cl. 228-122.000.

Methode Electronics, Inc.: *See*—
Klimek, John J.; Tesch, Charles L.; Feo, Ernest M.; and Lesky, Ronald W., 4,250,616, Cl. 29-830.000.

Mettoy Company Limited, The: *See*—
Crane, John C., 4,251,480, Cl. 264-132.000.

Metzger, Karl G.: *See*—
Feyen, Peter; Preiss, Michael; and Metzger, Karl G., 4,251,524, Cl. 424-226.000.

Metzl, Robert: *See*—
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,251,206, Cl. 432-5.000.

Meyer, Thomas N., to Westinghouse Electric Corp. Circuit interrupter. 4,251,701, Cl. 200-148.00A.

Meyerle, George M. Method and apparatus for reducing undesired transmission of acoustic energy from a loudspeaker cabinet and for acoustically isolating high fidelity sets therefrom. 4,251,045, Cl. 248-619.000.

Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, to Lechler GmbH & Co. KG; and Mannesmann AG. Device for spraying of a coolant on steel plates during continuous casting. 4,250,951, Cl. 164-444.000.

Miaskoff, Leonard, to Harris Corporation. Mechanism for transferring books and the like. 4,250,988, Cl. 198-719.000.

Michal, Jan: *See*—
Hubalek, Jan; Doksansky, Vladimir; and Michal, Jan, 4,251,099, Cl. 294-75.000.

Michan-Verde, Carlos: *See*—
Ortega-Aguirre, David; and Michan-Verde, Carlos, 4,251,710, Cl. 219-130.100.

Michel, Luc Y.: *See*—
Bodenmann, Hans U.; Van Herle, Louis P.; Michel, Luc Y.; Martens, Winand H.; and Pins, Heinrich, 4,250,997, Cl. 206-528.000.

Michel, Thomas J., to Santek, Inc. Ion flux density probe. 4,251,775, Cl. 324-464.000.

Michel, Walter, to Thermo Murg K.G. Burner furnace for solid fuels and a method of burning different kinds of solid fuel in this furnace. 4,250,817, Cl. 110-104.00R.

Microfusion S.A.: *See*—
Rabinovitch, Maurice; and Magnier, Pierre, 4,250,943, Cl. 164-35.000.

Midcon Pipeline Equipment Co.: *See*—
Slavens, Clyde M.; and Clavin, Edward A., 4,250,813, Cl. 104-118.000.

Middleton, Andrew D.; and Mitchell, Thomas P. Tamperproof container and closure. 4,251,002, Cl. 215-253.000.

Midrex Corporation: *See*—
Beggs, Donald; and Escott, Robert M., 4,251,267, Cl. 75-35.000.

Mietzsch, Fritz; Rudolph, Hans; Wolfers, Heinrich; and Alberts, Heinrich, to Bayer Aktiengesellschaft. Process for the polymerization of ethylene in the presence of silyl ethers as initiators. 4,251,650, Cl. 526-194.000.

Mikami, Tomohisa; Matsuda, Tadashi; and Abe, Fumitaka, to Fujitsu Limited. Non-impact printer using a modulated light beam. 4,251,825, Cl. 346-160.000.

Milburn, William W., Jr., to O'Rourke, Thomas W. Unitary structure and method for utilizing solar energy. 4,250,871, Cl. 126-430.000.

Miles Laboratories, Inc.: *See*—
Alter, John E.; and Blumberg, Ruth, 4,251,671, Cl. 562-580.000.
Chen, Anthony H.; and Jao, Yun-Chi, 4,251,632, Cl. 435-180.000.
Ginsburg, David; and Mayer, Wilfried J. W., 4,251,332, Cl. 204-59.00R.
White, William I., 4,251,222, Cl. 23-230.00B.
White, William I., 4,251,223, Cl. 23-230.00B.

Miller, Craig S. Method for making a watermattress with t-corner construction. 4,251,308, Cl. 156-211.000.

Miller, John: *See*—
Blatter, Albert; and Miller, John, 4,250,745, Cl. 73-118.000.

Milliot, Henri: *See*—
Mollet, Philippe; and Milliot, Henri, 4,250,847, Cl. 123-568.000.

Milvik, Michael. Tear-off flange for an article. 4,250,999, Cl. 206-610.000.

Mimura, Koji; Takemura, Toru; and Fujinaga, Yoshikazu, to Mitsubishi Rayon Company, Limited. Sheet material and method of producing the same. 4,251,587, Cl. 428-233.000.

Minami, Setsuo: *See*—
Minoura, Kazuo; and Minami, Setsuo, 4,251,126, Cl. 350-6.600.

Minaminihon Rakuno Kyodo Kabushiki Kaisha: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Minamizono, Junji; Yoneyama, Masakazu; and Kishimoto, Shinzo, to Fuji Photo Film Co., Ltd. Silver halide photographic materials containing gelatin reactive antistatic agents. 4,251,626, Cl. 430-527.000.

Minato, Kazuo: *See*—
Imaizumi, Fumio; Minato, Kazuo; and Kanai, Toshitaka, 4,251,199, Cl. 425-72.00R.

Mindeli, Mamuka S.: *See*—
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.

Mine Safety Appliances Company: *See*—
Andreychek, Paul D., 4,251,246, Cl. 55-481.000.
Reynolds, Kenneth E., 4,251,245, Cl. 55-481.000.

Miner, Carla J.; Baraff, David R.; Serinken, Nur M.; Streater, Richard W.; and Drobny, Vladimir F., to Northern Telecom Limited. LCDs (Liquid crystal displays) controlled by thin film diode switches. 4,251,136, Cl. 350-334.000.

Minnesota Mining and Manufacturing Company: *See*—
Hipp, Richard D., Jr., 4,251,001, Cl. 215-237.000.

Minnis, Gary R.; and Stiles, John L., to General Motors Corporation. Flow control valve. 4,251,193, Cl. 417-300.000.

Minolta Camera Kabushiki Kaisha: *See*—
Matsuda, Motonobu; Matsui, Tohru; Nanba, Yasuhiro; and Tanaka, Yoshihiro, 4,251,144, Cl. 354-25.000.

Minoura, Kazuo; and Ishii, Masaaki, to Canon Kabushiki Kaisha. Scanning optical system including an afocal system. 4,251,125, Cl. 350-6.500.

Minoura, Kazuo; and Minami, Setsuo, to Canon Kabushiki Kaisha. Light beam scanning device with opposed deflecting surfaces. 4,251,126, Cl. 350-6.600.

Mitchell, Glen R.; Soltis, Frank G.; and Hoffman, Roy L., to International Business Machines Corporation. Virtual addressing apparatus employing separate data paths for segment and offset portions of a virtual address and utilizing only the offset portion to calculate virtual address. 4,251,860, Cl. 364-200.000.

Mitchell, John R.: *See*—
Callejas, Ricardo J.; and Mitchell, John R., 4,251,674, Cl. 585-272.000.

Mitchell, Ronald A. Fish skinning machine. 4,250,594, Cl. 17-62.000.

Mitchell, Thomas P.: *See*—
Middleton, Andrew D.; and Mitchell, Thomas P., 4,251,002, Cl. 215-253.000.

Mitin, Leonid A.; Fadeev, Petr Y.; Fadeev, Vladimir Y.; Korobkov, Vladlen V.; Kulagin, Rim A.; and Ermilov, Nikolai P. Hammer for breaking strong abrasive materials. 4,251,113, Cl. 299-69.000.

Mitsubishi Chemical Industries Limited: *See*—
Morita, Yoshiharu; Itagaki, Takaharu; Ito, Tsuyoshi; and Wada, Shigenori, 4,251,442, Cl. 260-239.100.

Mitsubishi Denki Kabushiki Kaisha: *See*—
Akamatsu, Masahiko, 4,251,757, Cl. 318-83.000.
Yamamoto, Hiroshi; Suzuki, Shigehisa; and Tabata, Osamu, 4,251,839, Cl. 360-103.000.

Mitsubishi Rayon Company, Limited: *See*—
Mimura, Koji; Takemura, Toru; and Fujinaga, Yoshikazu, 4,251,587, Cl. 428-233.000.

Mitsuda, Tadao; Yasuda, Takeru; and Asai, Toshimichi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisan Industry Co., Ltd. Apparatus for controlling the amount of secondary air fed into an internal combustion engine. 4,250,706, Cl. 60-276.000.

Mitzel, Wilhelm, to GAO Gesellschaft fur Automation und Organisation mbH. Stacker for flat sheet material such as banknotes, bank papers, receipts and the like. 4,251,067, Cl. 271-196.000.

Miyakawa, Seiichi; and Yano, Takashi, to Ricoh Company, Ltd. Electrostatic apparatus for multi-image formation. 4,251,152, Cl. 355-3.00R.

Miyamoto, Taketoshi: *See*—
Nakagawa, Eishiro; Miyamoto, Taketoshi; Umino, Naozi; and Oyama, Hirosi, 4,251,164, Cl. 401-216.000.

Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, to Sharp Kabushiki Kaisha. Buttonhole stitch control in an automatic electronic sewing machine. 4,250,821, Cl. 112-158.00B.

Miyawaki, Toshio: *See*—
Ochiai, Michihiko; Morimoto, Akira; and Miyawaki, Toshio, 4,251,657, Cl. 544-027.000.

Mizokawa, Takumi: *See*—
Iyoki, Takeshi; Katsuki, Taichi; Mizokawa, Takumi; and Goto, Takaharu, 4,251,248, Cl. 62-21.000.

Mizukado, Masayoshi: *See*—
Morishita, Akio; Mizukado, Masayoshi; and Fukumura, Naoe, 4,250,785, Cl. 83-552.000.

Mobil Oil Corporation: *See*—
Audeh, Costandi A.; and Lovett, Richard N., 4,250,739, Cl. 73-17.00A.
Daviduk, Nicholas; and Haddad, James H., 4,251,484, Cl. 422-145.000.
Jaffe, Stephen B., 4,251,870, Cl. 364-500.000.
Schwartz, Albert B., 4,251,395, Cl. 252-455.00Z.
Wu, Margaret M., 4,251,676, Cl. 585-486.000.

Mochida, Haruo, to Nissan Motor Company, Limited. Steering lock device with safety system. 4,250,976, Cl. 180-271.000.

Moertel, George B., to Textron Inc. Woven slide fastener stringer with molded fastening elements. 4,250,598, Cl. 24-205.16R.

Mogi, Takao: *See*—
Okada, Hisao; Mogi, Takao; and Murakami, Shigetoshi, 4,251,812, Cl. 340-696.000.

Moiseev, Boris G.: *See*—
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.

Mollet, Philippe; and Milliot, Henri, to Regie Nationale des Usines Renault. Method and apparatus for limiting the action of a manual choke by the recirculation of exhaust gases. 4,250,847, Cl. 123-568.000.

Momose, Tsugio; Fujita, Akira; and Kubo, Kanji, to Hitachi, Ltd. Data processing system with an enhanced pipeline control. 4,251,859, Cl. 364-200.000.

Monarch Manufacturing Co.: *See*—
Bomar, William H., 4,250,680, Cl. 52-656.000.

Monsanto Company: *See*—
Chi, Henry K., 4,251,591, Cl. 428-315.000.
Gaertner, Van R., 4,251,256, Cl. 71-86.000.
Gaertner, Van R., 4,251,257, Cl. 71-86.000.
Howe, Robert K.; and Lee, Len F., 4,251,261, Cl. 71-90.000.
Kaufman, Robert J., 4,251,258, Cl. 71-87.000.
Nelson, Ronald C.; and Williams, Robert O., 4,251,355, Cl. 209-241.000.

Monsod, Godofredo G., Jr. Process for extracting valuable nutrients from the leaves of the water lily or water hyacinth plant. 4,251,508, Cl. 424-76.000.

Monta, Louis A., to United States Steel Corporation. Method for producing ingot mold stools. 4,250,946, Cl. 164-137.000.

Montana, Donald M. Dual channel capacitance measurement device. 4,251,767, Cl. 324-60.00C.

Montedison S.p.A.: *See*—
Balducci, Luigi; and Rustioni, Massimo, 4,251,283, Cl. 106-296.000.
PrezIuso, Ciro; Radice, Marco; Siddi, Giorgio; and Signorini, Ernesto, 4,251,259, Cl. 71-88.000.

Montes, Adriel. Piston ring with tongue and groove joint. 4,251,083, Cl. 277-221.000.

Montgomery, Charles F.: *See*—
Young, Frederick A.; and Montgomery, Charles F., 4,251,787, Cl. 333-209.000.

Moog Inc.: *See*—
Williams, Leonard J., 4,251,762, Cl. 318-653.000.

Moon, Jacob R., to Moon Water Saver, Inc. Water saving panel device for water closets and method. 4,250,579, Cl. 4-415.000.

Moon, Malcolm W., to Upjohn Company, The. Piperazinone and piperazine polypeptides. 4,251,438, Cl. 260-112.50R.

Moon Water Saver, Inc.: *See*—
Moon, Jacob R., 4,250,579, Cl. 4-415.000.

Moon, William G.: *See*—
Jewell, Douglas M.; and Moon, William G., 4,250,964, Cl. 166-303.000.

Moore, Jerome A.: *See*—
McLaughlin, Richard S.; and Moore, Jerome A., 4,251,009, Cl. 221-12.000.

Moore, Morris A.; and Bass, Robert H., to Motorola, Inc. Polling system for a duplex communications link. 4,251,865, Cl. 364-200.000.

Moore, Wayne R.; and Mann, Debra K., to Ralston Purina Company. Method of preparing readily disintegrable pharmaceutical compositions. 4,251,518, Cl. 424-180.000.

Morawski, Jean-Claude: *See*—
Machurat, Jean; Morawski, Jean-Claude; and Vrisakis, Georges, 4,251,281, Cl. 106-288.00B.

Moreau, Jean, to Etablissement Public de Diffusion dit "Telediffusion de France". System for broadcasting facsimile signals. 4,251,836, Cl. 358-264.000.

Morgan Construction Company: *See*—
Puchovsky, Melicher, 4,251,037, Cl. 242-81.000.

Morgan, Weld. Machine tool. 4,250,776, Cl. 82-2.00D.

Morimoto, Akira: *See*—
Ochiai, Michihiko; Morimoto, Akira; and Miyawaki, Toshio, 4,251,657, Cl. 544-027.000.

Moring, Wilfried, to Elektrothermit GmbH. Process for performing aluminothermic rail connection weldings as well as multipart casting mold for performing the process. 4,250,944, Cl. 164-54.000.

Morishita, Akio; Mizukado, Masayoshi; and Fukumura, Naoe, to Yamazaky Iron Works. Turret type punch press having a plurality of strikers. 4,250,785, Cl. 83-552.000.

Morishita Jinta Company, Limited: *See*—
Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, 4,251,195, Cl. 425-6.000.

Morita, Kozo: *See*—
Yamada, Takahiko; and Morita, Kozo, 4,251,783, Cl. 333-28.00R.

Morita, Minoru; and Takamatsu, Tetsuya, to Bridgestone Tire Company Limited. Process for hydrocracking a waste rubber. 4,251,500, Cl. 423-449.000.

Morita, Yoshiharu; Itagaki, Takaharu; Ito, Tsuyoshi; and Wada, Shigenori, to Mitsubishi Chemical Industries Limited. Method for synthesis of penicillin. 4,251,442, Cl. 260-239.100.

Morozumi, Shinji, to Kabushiki Kaisha Suwa Seikosha. IC Input circuitry. 4,251,739, Cl. 307-238.000.

Morse Diving Equipment Company, Inc.: *See*—
Owens, Jack H.; and Slavin, John E., 4,250,877, Cl. 128-207.110.

Morse, Everett W.; and Satter, Abdus, to Texaco Inc. Oil recovery method utilizing a surfactant slug driven by water of a controlled salinity. 4,250,961, Cl. 166-252.000.

Moryl, Richard, to C.O.M.E.T. Compagnie de Materiel et d'Equipements Techniques. Apparatus for manufacturing cages for set screws. 4,250,732, Cl. 72-357.000.

Moser, Robert E.: *See*—
Gullo, James M.; Heilman, William P.; Wayner, Robert J.; and Moser, Robert E., 4,251,527, Cl. 424-249.000.

Moses, Leonard. Tobacco-pipe holder and dryer. 4,250,631, Cl. 34-104.000.

Moses, Leonard L. Tobacco-pipe holder and dryer. 4,250,630, Cl. 34-104.000.

Moshitzky, Mordechai: *See*—
Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, 4,250,894, Cl. 128-774.000.

Moss, Richard D.: *See*—
Lim, Franklin; and Moss, Richard D., 4,251,387, Cl. 252-316.000.

Mostek Corporation: *See*—
McKenny, Vernon G.; and Chan, Tsiu C., 4,251,876, Cl. 365-182.000.

Motion Control, Inc.: *See*—
Jacobsen, Stephen C.; Stenehjem, Jerome C.; Stephen, Robert L.; and Luntz, Richard D., 4,250,878, Cl. 128-207.210.

Motor Wheel Corporation: *See*—
Smith, Richard W., 4,251,476, Cl. 264-46.700.

Motorola, Inc.: *See*—
Grenon, Lawrence A., 4,251,327, Cl. 204-15.000.
Luetzelschwab, Roland C.; and Bartell, Patrick E., 4,251,784, Cl. 333-127.000.
Moore, Morris A.; and Bass, Robert H., 4,251,865, Cl. 364-200.000.

Moustakas, Theodore D.; Friedman, Robert A.; and Wronski, Christopher R., to Exxon Research & Engineering Co. Gradient doping in amorphous silicon. 4,251,289, Cl. 136-255.000.

Mozley, Richard H., to National Research Development Corporation. Sand separator. 4,251,358, Cl. 209-437.000.

Mozokhin, Nikolai G., deceased: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.

Mrusek, Gerd: *See*—
Kniprath, Elmar; Mrusek, Gerd; Priebe, Hermann; and Reppenhagen, Claus, 4,251,489, Cl. 423-41.000.

Muehl, Herman D. Tank valve apparatus. 4,251,049, Cl. 251-58.000.

Mueller, James P.: *See*—
Haak, Willard J.; Marsden, Howard A.; and Mueller, James P., 4,250,794, Cl. 91-420.000.

Muenger, James R.; Child, Edward T.; and Brent, Albert, to Texaco Development Corporation. Production of cleaned and cooled synthesis gas. 4,251,228, Cl. 48-197.00R.

Muetterties, Andrew J., to Abbott Laboratories. Equipment sets and system for the sequential administration of medical liquids at dual flow rates employing a combined air barrier and liquid sequencing valve. 4,250,879, Cl. 128-214.00G.

Mulkey, Donna J. Label insert aid. 4,250,608, Cl. 29-278.000.

Muller, Gerhard: *See*—
Bauer, Alexander; Leistner, Gerhard; Muller, Gerhard; and Sell, Gunther, 4,251,371, Cl. 210-197.000.

Muller, Wolfgang: *See*—
Bergner, Dieter; Hannesen, Kurt; Muller, Wolfgang; and Schulte, Wilfried, 4,251,335, Cl. 204-98.000.

Mullritter, Ludwig: *See*—
Schnall, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, 4,251,155, Cl. 355-15.000.

Munk, Andreas: *See*—
Deigmuller, Gunter; Munk, Andreas; Rohe, Bruno; and Strunk, Manfred, 4,250,792, Cl. 86-1.00R.

Munker, Erich, to Schloemann-Siemag Aktiengesellschaft. Shear with inclined guides. 4,250,782, Cl. 83-376.000.

Munns, Robert J.: *See*—
Corr, Ernst F.; and Munns, Robert J., 4,251,034, Cl. 241-14.000.

Munns, Rupert H. Rodent or vermin trap. 4,250,655, Cl. 43-99.000.

Munoz, Joseph M.: *See*—
Worsham, Daniel A.; Ashley, Jack E.; and Munoz, Joseph M., 4,251,772, Cl. 324-158.00P.

Munsch, John M.: *See*—
Goldhaber, Richard P.; Munsch, John M.; and Wolf, Ludwig, Jr., 4,251,310, Cl. 156-273.000.

Murakami, Masuo: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.

Murakami, Shigetoshi: *See*—
Okada, Hisao; Mogi, Takao; and Murakami, Shigetoshi, 4,251,812, Cl. 340-696.000.

Murayama, Masaki, to Tokyo Shibaura Electric Co., Ltd. Control store organization in a microprogrammed data processing system. 4,251,862, Cl. 364-200.000.

Murphy, Joseph P.: *See*—
Norris, Richard M.; and Murphy, Joseph P., 4,250,703, Cl. 60-39.09P.

Mushy, Roman Y.: *See*—
Voronkov, Mikhail G.; Trofimov, Boris A.; Krjuchkov, Vasily V.; Amosova, Svetlana V.; Skvortsov, Jury M.; Volkov, Anatoly N.; Malkina, Anastasia G.; and Mushy, Roman Y., 4,251,666, Cl. 549-29.000.

Myers, Charles R.: *See*—
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., 4,251,240, Cl. 55-168.000.

N. V. Bekaert S.A.: *See*—
Claes, Jozef; and De Bruyne, Roger, 4,251,238, Cl. 55-97.000.

Nagashima, Tsuneyasu; and Machida, Kazunori, to Kasai Kogyo Kabushiki Kaisha; and Kato Hatsujo Kabushiki Kaisha. Connector. 4,250,599, Cl. 24-216.000.

Nagata, Yuji: *See*—
Kawabata, Hidetsugu; Nagata, Yuji; Ishiwatari, Keizo; and Shimizu, Toshio, 4,251,297, Cl. 148-121.000.

Naito, Nagayoshi: *See*—
Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,251,652, Cl. 528-279.000.

Naka, Akihiro; Honjo, Shuichi; and Aoike, Kaoru, to Dai-Ichi Kogyo Seiyaku Co., Ltd. Stabilized fuel slurry. 4,251,229, Cl. 44-51.000.

Nakada, Hisao; Harada, Michisuke; Yamase, Yukio; and Matsui, Ryuji, to Nippon Soda Company, Ltd. Cathodic sediment type of electrodeposition paint position. 4,251,414, Cl. 260-297.0NR.

Nakada, Hisao; Harada, Michisuke; and Yoshikoshi, Seiji, to Nippon Soda Company Limited. Paint composition for cationic electrodeposition process. 4,251,415, Cl. 260-29.7NR.

Nakagawa, Eishiro; Miyamoto, Taketoshi; Umino, Naozi; and Oyama, Hirosi, to Pentel Kabushiki Kaisha. Tip for ball point pen. 4,251,164, Cl. 401-216.000.

Nakaji, Tarushige: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.

Nakajima, Tomoo; Yamaoka, Shigeyuki; and Tanaka, Seiji, to Nissan Motor Company, Limited. Rear body structure of a vehicle. 4,251,103, Cl. 296-195.000.

Nakamura, Hiroshi, to Yoshida Kogyo, K.K. Apparatus for cutting off a pair of slide fastener stringers. 4,250,781, Cl. 83-210.000.

Nakamura, Masayuki, to Kurita Machinery Manufacturing Co., Ltd. Squeeze-filter plate for use in filter press. 4,251,373, Cl. 210-225.000.

Nakamura, Tamio: *See*—
Kobayashi, Yoshiyuki; and Nakamura, Tamio, 4,251,501, Cl. 423-465.000.

Nakamura, Yoshihisa: *See*—
Iwasaki, Shunichi; and Nakamura, Yoshihisa, 4,251,842, Cl. 360-134.000.

Nakata, Kiyoshi: *See*—
Katsura, Akira; Nakata, Kiyoshi; and Sakashi, Shoei, 4,250,808, Cl. 101-93.150.

Nakayama, Michihiro: *See*—
Kitamura, Shuji; Watanabe, Masashi; and Nakayama, Michihiro, 4,250,660, Cl. 47-57.600.

Nakazawa, Masaru: *See*—
Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.

Nanba, Yasuhiro: *See*—
Matsuda, Motonobu; Matsui, Tohru; Nanba, Yasuhiro; and Tanaka, Yoshihiro, 4,251,144, Cl. 354-25.000.

Nanne, Johannes M.; Post, Martin F. M.; and Stork, Willem H. J., to Shell Oil Company. Process for the preparation of ferrierite. 4,251,499, Cl. 423-329.000.

Narita, Kouzi, to Inoue Gomu Kogyo Kabushiki Kaisha. Method for working the end of a synthetic resin molding having laminated thereon a metal foil. 4,250,612, Cl. 29-527.100.

National Research Development Corporation: *See*—
Colman, Derek A.; and Thew, Martin T., 4,251,368, Cl. 210-788.000.
Fellgett, Peter B., 4,251,685, Cl. 179-1.0GQ.
McAuliffe, Charles A.; Levason, William; and McCullough, Francis P., 4,251,452, Cl. 260-429.00R.
Mozley, Richard H., 4,251,358, Cl. 209-437.000.
Pearson, Frank K.; and Lord, Harold, 4,251,846, Cl. 361-30.000.

National Steel Corporation: *See*—
Chatfield, David A.; Rzepka, Joseph F.; and Preble, Alan C., 4,251,294, Cl. 148-120.000.

Naum, Elena D. Product and method of forming network fabric. 4,250,823, Cl. 112-266.100.

Navarro, Luis J.; and Dagostino, Thomas P., to Tektronix, Inc. Digital oscilloscope with reduced jitter due to sample uncertainty. 4,251,754, Cl. 315-370.000.

Nazarenko, Nicholas, to Du Pont de Nemours, E. I., and Company. Recovery of triarylboranes. 4,251,468, Cl. 568-1.000.

NCR Corporation: *See*—
Eppley, Ricky L., 4,251,816, Cl. 340-747.000.

Nebe, William J.: *See*—
McCartin, Peter J.; and Nebe, William J., 4,251,618, Cl. 430-270.000.

Needes, Christopher R. S., to Du Pont de Nemours, E. I., and Company. Porous nickel coated electrodes. 4,251,344, Cl. 204-290.00R.

Nefedov, Valentin I.: *See*—
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.

Neff, Chester H.: *See*—
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 4,251,219, Cl. 23-230.00R.
Larson, Thurston E.; Lane, Russell W.; and Neff, Chester H., 4,251,220, Cl. 23-230.00R.

Nelson, Lorne W.: *See*—
Bonne, Ulrich; Nelson, Lorne W.; and Torborg, Ralph H., 4,251,025, Cl. 236-14.000.

Nelson, Ronald C.; and Williams, Robert O., to Monsanto Company. Apparatus for separating snakeskins and fines from polymeric pellets. 4,251,355, Cl. 209-241.000.

Neubert, Terry C., to General Tire & Rubber Company, The. Adhesion of polyamide or polyester cords to rubber. 4,251,409, Cl. 260-29.300.

Neuhaeusser, Horst; and Storm, Ole, to Neuhaeusser, Horst. Inclined article storage frames with a loading and unloading apparatus. 4,251,177, Cl. 414-276.000.

Newburg, Arthur G., to Piper Aircraft Corporation. Duct spacer clip and duct assembly. 4,250,927, Cl. 138-113.000.

NGK Insulators, Ltd.: *See*—
Ito, Kazuhiko, 4,251,242, Cl. 55-242.000.

Nguyen, Giao V.: *See*—
Ferree, William I., Jr.; and Nguyen, Giao V., 4,251,276, Cl. 106-27.000.

Nicko, Reinhard: *See*—
Stemme, Otto; Engelsmann, Dieter; and Nicko, Reinhard, 4,251,148, Cl. 354-173.000.

Nicolai, Richard; and Schlaepfer, Kenneth, to Nicolai, Richard. Energy recovery system for boiler and domestic water. 4,251,028, Cl. 237-8.00R.

Nielsen, Jacob A.: *See*—
Lorenzen, Peder; Nielsen, Jacob A.; and Prydtz, Ole, 4,250,690, Cl. 53-475.000.

Niemeier, Gerd: *See*—
Conrad, Ulrich; and Niemeier, Gerd, 4,250,709, Cl. 60-527.000.

Niess, Heinz: *See*—
Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, 4,251,162, Cl. 400-613.100.

Nieuwenhuis, Paulus G. J.: *See*—
Schroeder, Arnold; and Nieuwenhuis, Paulus G. J., 4,251,640, Cl. 525-17.000.

Nifco, Inc.: *See*—
Hara, Kunio; Kitamura, Osamu; and Yamaguchi, Katsuji, 4,250,596, Cl. 24-73.0HS.

Niggemann, Johanness: *See*—
Wagner, Kuno; Niggemann, Johanness; Findeisen, Kurt; and Scheinpflug, Hans, 4,251,255, Cl. 71-27.000.

Niklaus, Bernd; Braun, Manfred; and Maier, Roland, to Robert Bosch GmbH. Force transmitting arrangement. 4,250,765, Cl. 74-388.0PS.

Niklaus, Bernd: *See—*
Hoyler, Alfred; and Niklaus, Bernd, 4,250,984, Cl. 192-12.00D.
Ninomiya, Masakazu: *See—*
Harada, Susumu; and Ninomiya, Masakazu, 4,250,853, Cl. 123-326.000.
Nippon Coinco Co., Ltd.: *See—*
Kobayashi, Osamu; Yukimoto, Kohji; and Hayashi, Hiroshi, 4,250,905, Cl. 133-5.00R.
Nippon Electric Co., Ltd.: *See—*
Hareyama, Kyuichi, 4,251,743, Cl. 307-297.000.
Yamada, Takahiko; and Morita, Kozo, 4,251,783, Cl. 333-28.00R.
Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Tairadate, Katsutoshi, 4,250,791, Cl. 84-385.00R.
Nippon Kogaku K.K.: *See—*
Sugimori, Shiro; Goto, Tetsuro; and Maruyama, Sumiko, 4,251,147, Cl. 354-127.000.
Toyota, Kenji, 4,251,151, Cl. 354-60.00L.
Nippon Kokan Kabushiki Kaisha: *See—*
Hara, Keiichi; and Fujisawa, Tomoji, 4,251,175, Cl. 409-140.000.
Nippon Paint Co., Ltd.: *See—*
Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, 4,251,622, Cl. 430-332.000.
Nippon Soda Company, Ltd.: *See—*
Nakada, Hisao; Harada, Michisuke; Yamase, Yukio; and Matsui, Ryuji, 4,251,414, Cl. 260-297.0NR.
Nakada, Hisao; Harada, Michisuke; and Yoshikoshi, Seiji, 4,251,415, Cl. 260-29.7NR.
Nippon Soken, Inc.: *See—*
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Matsui, Takeshi; Kuno, Akira; and Shinoda, Yoshio, 4,250,854, Cl. 123-352.000.
Nippon Steel Corporation: *See—*
Asano, Hidejiro; Oka, Joji; Saito, Katushi; and Takasugi, Masashi, 4,251,329, Cl. 204-27.000.
Tanigaki, Takashi; Koshio, Takeshi; and Otawa, Motohiro, 4,251,711, Cl. 219-146.240.
Nippon Telegraph and Telephone Public Corporation: *See—*
Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, 4,251,691, Cl. 179-2.0TV.
Yamada, Takahiko; and Morita, Kozo, 4,251,783, Cl. 333-28.00R.
Yamaki, Junichi; and Yamaji, Akihiko, 4,251,607, Cl. 429-194.000.
Nippondenso Co. Ltd.: *See—*
Harada, Susumu; and Ninomiya, Masakazu, 4,250,853, Cl. 123-326.000.
Nishikawa, Masatoshi. Plastic scissors with metallic cutting inserts. 4,250,620, Cl. 30-254.000.
Nishikawa, Munehiro, to Kubota, Ltd. Device for holding nested pipes to one another. 4,250,928, Cl. 138-113.000.
Nishikawa, Shigeo, to Yamato Sangyo Inc. Device for preventing backfire of inflammable gases. 4,251,226, Cl. 48-192.000.
Nishimatsu, Akira: *See—*
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Nissan Chemical Industries, Limited: *See—*
Ozawa, Kiyomi; Ishii, Shigeru; and Hatanaka, Masataka, 4,251,662, Cl. 546-301.000.
Nissan Motor Company, Limited: *See—*
Kubota, Hitoshi; and Yoshizawa, Katsuyuki, 4,251,117, Cl. 303-24.00F.
Mochida, Haruo, 4,250,976, Cl. 180-271.000.
Nakajima, Tomoo; Yamaoka, Shigeyuki; and Tanaka, Seiji, 4,251,103, Cl. 296-195.000.
Takase, Sadao, 4,250,849, Cl. 123-179.00G.
Nissen, Dietmar: *See—*
Heinz, Gerhard; Dikow, Hermann; Jarre, Wolfgang; Nissen, Dietmar; Matthias, Klaus; and Kaeppel, Hanshelmut, 4,251,411, Cl. 260-29.60E.
Nisshin Steel Co., Ltd.: *See—*
Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, 4,251,269, Cl. 75-60.000.
Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, 4,251,270, Cl. 75-60.000.
Nitto Chemical Industry Co., Ltd.: *See—*
Fujita, Takeyuki; Suto, Masaru; and Ogura, Kazumoto, 4,251,460, Cl. 564-132.000.
Nixdorf Computer AG: *See—*
Schmeykal, Rudolf; and Weigel, Peter, 4,251,010, Cl. 221-93.000.
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., to Compagnie Francaise des Petroles; Etudes Petrolieres Marines; Ateliers et Chantiers de Bretagne - A.C.B.; Compagnie Maritime d'Expertises; Compagnie Generale pour les Developpements Operationnels de Richesses Sous-Marines (Doris); and Societe Nationale Elf Aquitaine (Production). Method of welding together submerged pipe ends by means of a telescopic connection sleeve. 4,251,167, Cl. 405-170.000.
Nocke, Hermann H., to Ruhrkohle Aktiengesellschaft. Method of and an arrangement for longwall mining. 4,251,108, Cl. 299-8.000.
Nohira, Hidetaka: *See—*
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Nohmi Bosai Kogyo Co., Ltd.: *See—*
Handa, Takashi; and Endo, Koichi, 4,251,225, Cl. 23-232.00E.
Noll Manufacturing Co.: *See—*
Pinto, Mario R., 4,251,094, Cl. 285-382.500.
Nomaguchi, Kanemasa: *See—*
Arakawa, Kouji; and Nomaguchi, Kanemasa, 4,251,641, Cl. 525-36.000.
Nomura, Minoru: *See—*
Sakamoto, Hiroshi; Nomura, Minoru; and Hagiri, Minoru, 4,251,593, Cl. 428-411.000.
Nonaka, Susumu: *See—*
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.
Nonnemacher, James R.; Regan, Michael T.; and Webster, Frank G., to Eastman Kodak Company. Isoquinolinedione photoelectrophoretic materials for imaging processes. 4,251,609, Cl. 430-9.000.
Nooyen, Ray E.: *See—*
Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., 4,250,896, Cl. 130-27.00T.
Nordeutsche Affinerie: *See—*
Kniprath, Elmar; Mrusek, Gerd; Priebe, Hermann; and Reppenhagen, Claus, 4,251,489, Cl. 423-41.000.
Nordisk Insulinlaboratorium: *See—*
Rasmussen, Mirella E.; Jensen, Jorgen V.; and Hansen, Jorgen F., 4,251,437, Cl. 260-112.00B.
Norris, Richard M.; and Murphy, Joseph P., to Avco Corporation. Swinging door particle separator and deicing system. 4,250,703, Cl. 60-39.09P.
Norro, Allan F.: *See—*
Petersson, Stig A.; and Norro, Allan F., 4,251,715, Cl. 219-284.000.
Northern Telecom Limited: *See—*
Miner, Carla J.; Baraff, David R.; Serinken, Nur M.; Streater, Richard W.; and Drobny, Vladimir F., 4,251,136, Cl. 350-334.000.
Norton, Craig D. Exercising device with compressible hand grip on an elastic card. 4,251,071, Cl. 272-137.000.
Notarianni, Aurelio F.: *See—*
Bruzzese, Tiberio; Ferrari, Lorenzo; and Notarianni, Aurelio F., 4,251,520, Cl. 424-180.000.
Novak, Richard E.: *See—*
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,251,206, Cl. 432-5.000.
Novikov, Ivan N.: *See—*
Kondratenko, Vladimir I.; Novikov, Ivan N.; Feldman, Isai N.; Moiseev, Boris G.; Kolesnikov, Valery Y.; Nefedov, Valentin I.; and Fudaler, Jury A., 4,251,457, Cl. 260-544.00K.
Nowak, Edmund, to Zaklad Nr 2 Hydomat Fabryka Pras Automatycznych Ponar-Plasomat. High-speed hydraulic press. 4,250,805, Cl. 100-269.00B.
Noyori, Tatsuhiko: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; and Takehata, Tetsuro, 4,251,202, Cl. 425-461.000.
Nozaki, Mineo: *See—*
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Nussbaum, Theodore W.: *See—*
Pitts, Robert W., Jr.; Rundell, Herbert A.; and Nussbaum, Theodore W., 4,250,758, Cl. 73-650.000.
Nusslein, Ludwig; and Arndt, Friedrich, to Schering AG. 2-(Dimethylcarbamoylimino)-benzthiazoline-3-ID-salts, used in selective weed control. 4,251,260, Cl. 71-90.000.
Oak Industries, Inc.: *See—*
Oughton, Ray L., Jr.; and Larson, Willis A., 4,251,683, Cl. 174-74.00R.
Oas, David C., to Beloit Corporation. Apparatus for producing articles from thermoplastic parisons. 4,251,203, Cl. 425-526.000.
Oberg, Gary; Wocken, Gerald F.; Huntwork, Daniel E.; and Fortun, Wayne M., to Hutchinson Industrial Corporation. Method of making fully etched type-carrier elements. 4,251,318, Cl. 156-645.000.
Ochiai, Michihiko; Morimoto, Akira; and Miyawaki, Toshio, to Takeda Chemical Industries, Ltd. Method for removing protective groups. 4,251,657, Cl. 544-027.000.
Oda, Kazutaka; and Okishi, Yoshio, to Fuji Photo Film Co., Ltd. Light-sensitive printing plate process. 4,251,620, Cl. 430-300.000.
Oetzel, John T., to B.F. Goodrich Company, The. Peroxide cured epihalohydrin polymers. 4,251,648, Cl. 525-187.000.
Office National d'Etudes et de Recherches Aerospatiales: *See—*
Rabinovitch, Maurice; and Magnier, Pierre, 4,250,943, Cl. 164-35.000.
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Ishikawa, Hisashi, to Lotte Co. Ltd. Chewing gum and method of preparation thereof. 4,251,548, Cl. 426-3.000.
Ogihara, Masuo; Chimura, Kozo; and Shinozaki, Nobuo, to Seiko Koki Kabushiki Kaisha. Switching device for battery powered alarm clock. 4,251,878, Cl. 368-257.000.
Ogle, Claude W. Bale cutting apparatus. 4,250,783, Cl. 83-397.000.
Ogren, Dennis F.: *See—*
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., 4,251,378, Cl. 210-522.000.
Ogura, Kazumoto: *See—*
Fujita, Takeyuki; Suto, Masaru; and Ogura, Kazumoto, 4,251,460, Cl. 564-132.000.
Ogura, Tsugitoshi; Hiraki, Akio; and Kajimoto, Hikokusu, to Director-General Seiichi Ishizaka of the Agency of Industrial Science and Technology. Method for effecting coal-liquefying reaction. 4,251,345, Cl. 208-8.0LE.

Oguri, Katsuhiko: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,251,695, Cl. 369-136.000.
Ohara, Osamu; and Takiguchi, Kazuo, to Teijin Chemicals, Ltd. Polycarbonate resin composition. 4,251,425, Cl. 260-37.0PC.
Ohmura, Kaoru: *See*—
Shibasaki, Ichiro; Ohmura, Kaoru; and Kimura, Takeo, 4,251,795, Cl. 338-32.00R.
Ohsako, Kyoichi: *See*—
Uchida, Isamu; Uchida, Shinya; and Ohsako, Kyoichi, 4,251,867, Cl. 364-408.000.
Ohta, Masafumi: *See*—
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,614, Cl. 430-79.000.
Ohtani, Masami, to Diesel Kiki Company, Ltd. Vehicle air conditioning apparatus. 4,250,956, Cl. 165-36.000.
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, to Kuraray Co., Ltd.; and Minaminihon Rakuno Kyodo Kabushiki Kaisha. Process for producing a fibrous milk protein product. 4,251,567, Cl. 426-580.000.
Oinuma, Norimasa: *See*—
Ariga, Kazuo; Oinuma, Norimasa; Akanuma, Youichiro; and Yoshida, Mitunari, 4,250,645, Cl. 40-545.000.
Oka, Joji: *See*—
Asano, Hidejiro; Oka, Joji; Saito, Katushi; and Takasugi, Masashi, 4,251,329, Cl. 204-27.000.
Okada, Hideo: *See*—
Yamato, Yoshihiro; Okada, Hideo; Takasaka, Masayuki; and Urabe, Masanori, 4,250,798, Cl. 493-306.000.
Okada, Hisao; Mogi, Takao; and Murakami, Shigetoshi, to Sony Corporation. Remote control system. 4,251,812, Cl. 340-696.000.
Okamura, Shigeru: *See*—
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Okishi, Yoshio: *See*—
Oda, Kazutaka; and Okishi, Yoshio, 4,251,620, Cl. 430-300.000.
Okudaira, Sadao, to Asahi Kogaku Kogyo Kabushiki Kaisha. Compact standard zoom lens. 4,251,132, Cl. 350-423.000.
Okuno, Tadahide: *See*—
Kaneko, Yoshikazu; Suzuka, Takashi; and Okuno, Tadahide, 4,251,854, Cl. 362-5.000.
Olin Corporation: *See*—
Ficner, Stanley A.; Klanica, Andrew J.; and Korenowski, Theodore F., 4,251,491, Cl. 423-185.000.
Kircher, Morton S., 4,251,334, Cl. 204-98.000.
Ralston, Richard W., Jr., 4,251,336, Cl. 204-99.000.
Olson, B. Newell, to Dominion Pharmacal, Inc. Process and composition for reducing dental plaque. 4,251,507, Cl. 424-49.000.
Olson, Kathy L. Oxygen walker. 4,251,044, Cl. 248-166.000.
Olson, Leonard T.: *See*—
Ecker, Mario E.; and Olson, Leonard T., 4,251,852, Cl. 361-386.000.
Olson, Wayne L. Sediment removal apparatus. 4,250,933, Cl. 141-98.000.
Olson, Wayne R.: *See*—
Marver, James M.; and Olson, Wayne R., 4,251,875, Cl. 364-754.000.
Olympus Optical Co., Ltd.: *See*—
Kimura, Tadashi, 4,251,158, Cl. 356-8.000.
Kondo, Isao, 4,251,753, Cl. 315-219.000.
Tojo, Tsutomu, 4,251,131, Cl. 350-414.000.
Ongley, Edwin D. Continuous flow centrifugation method of sampling. 4,250,752, Cl. 73-421.00B.
Onikov, Eduard A.: *See*—
Galperin, Alexandr L.; Onikov, Eduard A.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,250,932, Cl. 139-436.000.
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, to Victor Company of Japan Ltd. Pickup cartridge having means for producing magnetic fields of opposite directions for coil plate. 4,251,695, Cl. 369-136.000.
O'Rafferty, Corna: *See*—
O'Rafferty, James; and O'Rafferty, Corna, 4,251,016, Cl. 224-250.000.
O'Rafferty, James; and O'Rafferty, Corna. Stringed instrument harness. 4,251,016, Cl. 224-250.000.
O'Rear, Dennis J.; and Mayer, Jerome F., to Chevron Research Company. Petroleum distillate upgrading process. 4,251,348, Cl. 208-61.000.
Orion Research Incorporated: *See*—
Diggens, Albert A., 4,251,218, Cl. 23-230.00R.
Orlanda, Pedro. Mechanical hoe. 4,250,969, Cl. 172-97.000.
Orlowski, David C.; and Church, Brooks D. Multi-stage continuous system for production of heteropolysaccharides. 4,251,633, Cl. 435-288.000.
Orogil: *See*—
Le Coent, Jean-Louis; and Demoures, Bernard, 4,251,379, Cl. 252-33.000.
O'Rourke, Thomas W.: *See*—
Milburn, William W., Jr., 4,250,871, Cl. 126-430.000.
Orr, Newell H.; and Forrest, Arthur L., to Titanium Industries. Novel titanium-containing electrode and electrolytic processes employing same. 4,251,337, Cl. 204-105.00R.
Ortega-Aguirre, David; and Michan-Verde, Carlos. Resistor type arc welding machine. 4,251,710, Cl. 219-130.100.
Ortlieb, Robert M.: *See*—
Jerue, Richard A.; and Ortlieb, Robert M., 4,250,775, Cl. 82-1.00C.
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., to Imperial Chemical Industries Limited. Inorganic reinforcing phase dispersed and bonded to polymer matrix. 4,251,576, Cl. 428-331.000.
Osmond, Desmond W. J.: *See*—
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., 4,251,576, Cl. 428-331.000.
Oster, Eugene A., Jr., to Owens-Illinois, Inc. Tubular luminescent solar collector-photocell structure. 4,251,284, Cl. 136-247.000.
Otagiri Mercantile Company, Inc.: *See*—
Ishiguro, Tamezo, 4,250,659, Cl. 46-238.000.
Otawa, Motohiro: *See*—
Tanigaki, Takashi; Koshio, Takeshi; and Otawa, Motohiro, 4,251,711, Cl. 219-146.240.
Othmer, Donald F. Method for producing SNG or SYN gas from wet solid wastes and low grade fuels. 4,251,227, Cl. 48-197.00R.
Otis Engineering Corporation: *See*—
Sizer, Phillip S.; and Council, Malcolm N., 4,251,176, Cl. 414-22.000.
Ott, Jerry E., to Farnam Livestock Equipment and Insecticides, Inc. Method for systemic control of parasitic insects. 4,250,838, Cl. 119-106.000.
Ott, Karl-Heinz: *See*—
Humme, Gert; Ott, Karl-Heinz; Hardt, Dietrich; and Dinges, Karl, 4,251,645, Cl. 525-75.000.
Oughton, Ray L., Jr.; and Larson, Willis A., to Oak Industries, Inc. Interconnect tail for a membrane switch. 4,251,683, Cl. 174-74.00R.
Outboard Marine Corporation: *See*—
Dogadko, Peter; and Jereb, Richard F., 4,251,848, Cl. 361-196.000.
Owen, Jeffrey D.; and Brown, Harold M., to University of Utah. Process for preparing di[p-(1,1,3,3-tetramethylbutyl)phenyl] phosphoric acid ester. 4,251,470, Cl. 260-990.000.
Owens-Corning Fiberglas Corporation: *See*—
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,577, Cl. 428-378.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,586, Cl. 428-220.000.
Varrasso, Eugene C.; and Henry, Richard K., 4,251,475, Cl. 264-40.100.
Owens-Illinois, Inc.: *See*—
Oster, Eugene A., Jr., 4,251,284, Cl. 136-247.000.
Owens, Jack H.; and Slavin, John E., to Morse Diving Equipment Company, Inc. Diver's helmet and face mask for use therewith. 4,250,877, Cl. 128-207.110.
Owens, William A.; and Williams, Alvester, Jr., to Procter & Gamble Company, The. Passive liquid dosing dispenser. 4,251,012, Cl. 222-185.000.
Oyama, Hirosi: *See*—
Nakagawa, Eishiro; Miyamoto, Taketoshi; Umino, Naozi; and Oyama, Hirosi, 4,251,164, Cl. 401-216.000.
Oyama, Mitsuhiro: *See*—
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, 4,251,796, Cl. 338-176.000.
Ozaki, Satoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for storing radioactive materials. 4,250,832, Cl. 118-724.000.
Ozawa, Kiyomi; Ishii, Shigeru; and Hatanaka, Masataka, to Nissan Chemical Industries, Limited. Phenoxypyridine derivatives. 4,251,662, Cl. 546-301.000.
Ozawa, Toshiaki: *See*—
Kondo, Hiroatsu; Nozaki, Mineo; Ozawa, Toshiaki; Asakura, Osamu; and Okamura, Shigeru, 4,250,807, Cl. 101-93.090.
Pacific Western Systems Inc.: *See*—
Worsham, Daniel A.; Ashley, Jack E.; and Munoz, Joseph M., 4,251,772, Cl. 324-158.00P.
Pagani, Franco. Cigarette puncher. 4,250,899, Cl. 131-170.00R.
Pagel, Ernst-Olav; and Vetter, Hermann, to Robert Bosch GmbH. DC Converter. 4,251,847, Cl. 361-91.000.
Pagilagan, Rolando U., to Du Pont de Nemours, E. I., and Company. Plasticized nylon 612 with improved zinc chloride resistance. 4,251,424, Cl. 260-30.80R.
Pakki, Viktor I.; Guseinov, Chingiz S.; Bogdanovich, Sabir Y.; and Guzhin, Petr D. Filtering apparatus. 4,251,375, Cl. 210-304.000.
Palacio, Gerard: *See*—
Bessouat, Roger; Marjollet, Jacques; and Palacio, Gerard, 4,250,841, Cl. 122-483.000.
Palau, Joseph; and Froment, Jean-Paul, to Societe Anonyme des Etablissements Staubli. Reading device for dobbies or other weaving mechanism. 4,250,930, Cl. 139-324.000.
Palmer, Jay W., to United States Gypsum Company. Carpet backing adhesive. 4,251,416, Cl. 260-29.70S.
Panis, Constantius J. W.: *See*—
Compen, Johannes M. A. A.; Eisses, Reinhart C. W.; Panis, Constantius J. W.; and Paridaens, Cornelius J. H., 4,251,749, Cl. 313-479.000.
Pappalardo, P. Paul; Conway, Carle C.; and Rodon, Frank, to Eastern Molding International, Inc. Grass catcher. 4,250,698, Cl. 56-202.000.
Paquette, Omer E. Combination dental applicator and carver instrument. 4,251,213, Cl. 433-144.000.
Par Enterprises: *See*—
Cook, Floyd R.; and Anzil, Luis, 4,250,588, Cl. 15-77.000.
Paradowski, Henri: *See*—
Gauberthier, Joseph J.; and Paradowski, Henri, 4,251,247, Cl. 62-9.000.

Paragon Resources, Inc.: *See*—
Feinberg, Emanuel, 4,251,024, Cl. 236-1.00G.

Paridaens, Cornelius J. H.: *See*—
Compen, Johannes M. A. A.; Eisses, Reinhart C. W.; Panis, Constantius J. W.; and Paridaens, Cornelius J. H., 4,251,749, Cl. 313-479.000.

Park Chemical Company: *See*—
Foreman, Robert W.; and Meszaros, Anthony G., 4,251,292, Cl. 148-18.000.

Park-Ohio Industries, Inc.: *See*—
Balzer, Norbert R., 4,251,705, Cl. 219-10.590.
Masie, James R.; and Snyder, James J., 4,251,704, Cl. 219-10.590.
Pusateri, James J.; and Masie, James R., 4,251,707, Cl. 219-10.790.

Parkin, Paul C., to Imperial Chemical Industries Limited. Apparatus for spinning bicomponent filaments. 4,251,200, Cl. 425-131.500.

Parr, David, to David Parr & Associates Ltd. Packaging arrangement for electrical heating units adapted for adhesive attachment to a surface. 4,251,712, Cl. 219-203.000.

Partington, Everett J. Miter table for use with a saber saw. 4,250,624, Cl. 30-374.000.

Pascal, Pierre B.: *See*—
Zante, Hubert A.; Pascal, Pierre B.; Schilling, Michel E.; and Lamic, Jackie G., 4,250,705, Cl. 60-225.000.

Pastor, Antonio C., to Hughes Aircraft Company. Method of growing metal halide and chalcogenide crystals for use as infrared windows. 4,251,315, Cl. 156-616.00R.

Patterson, David L.: *See*—
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,251,206, Cl. 432-5.000.

Paul, Roger A. E. C.: *See*—
LeGrand, Charles G. G. R.; and Paul, Roger A. E. C., 4,251,562, Cl. 426-573.000.

Pauli, Balduin L. Step grate. 4,250,819, Cl. 110-281.000.

Paulsson, John: *See*—
Holm, Claes H.; and Paulsson, John, 4,251,573, Cl. 427-236.000.

Payrhammer, Bernd: *See*—
Knor, Bernhard; Payrhammer, Bernd; and Wahl, Helmut, 4,251,157, Cl. 355-68.000.

Pearson, Frank K.; and Lord, Harold, to National Research Development Corporation. Apparatus for sensing short circuit faults in alternating current supply lines. 4,251,846, Cl. 361-30.000.

Pechhold, Engelbert: *See*—
Robinson, Ivan M.; and Pechhold, Engelbert, 4,251,654, Cl. 528-417.000.

Pecht, Adam; and Wegner, John F., to Allied Record Company. Method and apparatus for injection molding data carrying elements. 4,251,479, Cl. 264-106.000.

Pedersen, Hans-Kristian; Sorensen, Frode; and Hyldal, Jorgen, to Danfoss A/S. Control circuit for a self-starting electric motor. 4,251,758, Cl. 318-254.000.

Peluso, Philip J.: *See*—
Kellogg, Seeley C.; Peluso, Philip J.; and Bernardi, Richard B., 4,251,779, Cl. 331-1.00A.

Pelz, David T.; and Huegel, Frederick G., to Preceptor Golf Ltd. Target alignment system for use with a golf club. 4,251,077, Cl. 273-186.00A.

Penco, Sergio; Angelucci, Francesco; and Arcamone, Federico, to Farmitalia Carlo Erba S.p.A. 9-Desacetyl-9-ethylen oxide daunorubicin, process for its manufacture and use therefor. 4,251,513, Cl. 424-180.000.

Pennwalt Corporation: *See*—
Cushman, Robert H.; Ciavattoni, Anthony; Flynn, John J.; and Schubert, Thomas J., 4,251,730, Cl. 250-439.00P.

Pentel Kabushiki Kaisha: *See*—
Nakagawa, Eishiro; Miyamoto, Taketoshi; Umino, Naozi; and Ovama, Hirosi, 4,251,164, Cl. 401-216.000.

Perkin-Elmer Corporation, The: *See*—
Boyson, Bert; Gallagher, Terence J.; and Porsche, William E., 4,250,806, Cl. 101-2.000.

Perrin, Charles L., to University of California, The Regents of the. Production of malonic anhydrides and derivatives thereof. 4,251,447, Cl. 260-333.000.

Perrone, George L.: *See*—
Liu, Hsin-Tuan; Perrone, George L.; and Gambee, Leo E., 4,251,183, Cl. 415-198.100.

Perry, Paul E.: *See*—
Brennan, Walter W.; Myers, Charles R.; and Perry, Paul E., 4,251,240, Cl. 55-168.000.

Persson, Bo S. O.: *See*—
Dreher, Heinz W.; and Persson, Bo S. O., 4,250,942, Cl. 160-297.000.

Pertron Controls Corporation: *See*—
Mathews, James K., 4,251,764, Cl. 323-320.000.

Peters, Beldon A.: *See*—
Heilhecker, Joe K.; Robinson, Leon H., Jr.; and Peters, Beldon A., 4,250,974, Cl. 175-48.000.

Petersen, Hans C., to Danvoss A/S. Spring arrangement for the control valve of a hydrostatic steering unit. 4,251,194, Cl. 418-61.00B.

Peterson, Marvin L.; and Maxson, Orwin G., to Conoco, Inc. Sacrificial anode apparatus. 4,251,343, Cl. 204-197.000.

Petersson, Stig A.; and Norro, Allan F., to Boliden Aktiebolag. Method for directly heating concentrated sulfuric acid by electric current flow between surface-passivated electrodes. 4,251,715, Cl. 219-284.000.

Petroleo Brasileiro S.A. - Petrobras: *See*—
Coutinho, Paulo H. D. A.; and Cabral, Julio A. R., 4,251,677, Cl. 585-639.000.

Petry, Wolfgang: *See*—
Koehler, Michael; and Petry, Wolfgang, 4,251,274, Cl. 75-252.000.

Pfau, Jean: *See*—
Frei, Charles; and Pfau, Jean, 4,251,706, Cl. 219-69.00D.

Pfefferkorn, Dietmar, to BASF Aktiengesellschaft. Method and apparatus for measuring the electroacoustic properties of magnetic tapes. 4,251,882, Cl. 371-28.000.

Pfeifer, Rolf, to Siemens Aktiengesellschaft. X-ray diagnostic installation for X-ray photographs. 4,251,729, Cl. 250-402.000.

Pfeiffer, Hans C.; and Sturans, Maris A., to International Business Machines Corporation. Compensated magnetic deflection coil for electron beam lithography system. 4,251,728, Cl. 250-396.00R.

Pfenninger, Billy J.; and Kahler, Otto, to Krause Plow Corporation. Automatic coulter depth control. 4,250,970, Cl. 172-142.000.

Pfizer Inc.: *See*—
Gruetzmacher, Gordon D.; and Czuba, Leonard J., 4,251,563, Cl. 426-605.000.

Pfleiderer, Hans-Joerg, to Siemens Aktiengesellschaft. Integrated filter circuit. 4,251,785, Cl. 333-165.000.

Philip Morris Incorporated: *See*—
Utsch, Francis V.; de la Burde, Roger Z.; and Aument, Patrick E., 4,250,898, Cl. 131-140.00P.

Phillips, Emyr: *See*—
Randell, Donald R.; and Phillips, Emyr, 4,251,493, Cl. 423-226.000.

Phillips Petroleum Company: *See*—
Austin, Oliver K., 4,251,221, Cl. 23-230.00A.
Brady, Donnie G.; Williams, Ralph P.; and Hill, Harold W., Jr., 4,251,575, Cl. 427-341.000.
Callejas, Ricardo J.; and Mitchell, John R., 4,251,674, Cl. 585-272.000.
Mark, Harold W.; and Childs, William V., 4,251,673, Cl. 568-858.000.

Piccirelli, Robert A.: *See*—
Leffert, Charles B.; Kummler, Ralph H.; and Piccirelli, Robert A., 4,251,339, Cl. 204-157.10H.

Picker Corporation: *See*—
Kellogg, Seeley C.; Peluso, Philip J.; and Bernardi, Richard B., 4,251,779, Cl. 331-1.00A.

Pickering & Company: *See*—
Hofer, Alan; and Yama, Frank, 4,251,807, Cl. 340-384.00R.

Pierburg GmbH & Co. KG: *See*—
Dammann, Martin, 4,251,472, Cl. 261-44.00C.
Schwander, Dieter; Strell, Hermann; and Findeisen, Bernd, 4,251,471, Cl. 261-34.00A.

Piercy, David R. Gas detection. 4,251,727, Cl. 250-343.000.

Pilz, Georg: *See*—
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,251,653, Cl. 528-335.000.

Pingel, Donna M.: *See*—
Pingel, Wayne H.; and Pingel, Donna M., 4,250,921, Cl. 137-625.410.

Pingel, Wayne H.; and Pingel, Donna M. Reserve metering valve. 4,250,921, Cl. 137-625.410.

Pinnis, Yanis Y.: *See*—
Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y., 4,251,138, Cl. 350-357.000.

Pins, Heinrich: *See*—
Bodenmann, Hans U.; Van Herle, Louis P.; Michel, Luc Y.; Martens, Winand H.; and Pins, Heinrich, 4,250,997, Cl. 206-528.000.

Pinto, Mario R., to Noll Manufacturing Co. Spirally wound corrugated pipe connector. 4,251,094, Cl. 285-382.500.

Piper Aircraft Corporation: *See*—
Newburg, Arthur G., 4,250,927, Cl. 138-113.000.

Pitney Bowes Inc.: *See*—
Check, Frank T., Jr., 4,251,874, Cl. 364-900.000.

Pittinger, Charles B.; and Pittinger, Cynthia A. Filament vegetation trimmer. 4,250,623, Cl. 30-347.000.

Pittinger, Cynthia A.: *See*—
Pittinger, Charles B.; and Pittinger, Cynthia A., 4,250,623, Cl. 30-347.000.

Pittman, Robert W.: *See*—
Gass, John C.; Kerr, Noell C.; and Pittman, Robert W., 4,251,191, Cl. 417-111.000.

Pitts, Adrian E.: *See*—
Haynes, Charles W.; and Pitts, Adrian E., 4,250,773, Cl. 81-57.180.

Pitts, Robert W., Jr.; Rundell, Herbert A.; and Nussbaum, Theodore W., to Texaco Inc. Combination for use in a rotary drilling system with torque meter. 4,250,758, Cl. 73-650.000.

Plattner, Robert F.; Arend, Raymond J.; and Verberkmoes, John A., to Bastian Blessing Co. Inc. Self-service replenishable food cabinet. 4,250,955, Cl. 165-14.000.

Pleschiutschnigg, Fritz-Peter: *See*—
Mezger, Sepp; Christner, Werner; Schrewe, Hans; Pleschiutschnigg, Fritz-Peter; and Lerch, Kurt, 4,250,951, Cl. 164-444.000.

Plessey Handel und Investments AG: *See*—
Martin, Barrie J.; Harvey, Dennis; and Stanwell, Peter, 4,251,031, Cl. 239-102.000.

Plowman, Richard E.; and Spencer, Bruce J., to Dentsply Research & Development Corp. Fluid control system for dental console. 4,251,211, Cl. 433-98.000.

Plummer, Cole N.: *See—*
Brown, Charles D.; Plummer, Cole N.; Tripp, Roger N.; and Fernald, Maurice E., 4,251,190, Cl. 417-68.000.
Plummer, William T., to Polaroid Corporation. Photographic apparatus for providing a signal visible in a camera viewfinder. 4,251,146, Cl. 354-53.000.
Plymouth Locomotive Works, Inc.: *See—*
Christian, Miles W., 4,251,477, Cl. 264-82.000.
Pobuda, Erhard; and Kilian, Alois, to Dravo Corporation. Ignition hood with swirl combustion chamber. 4,251,062, Cl. 266-178.000.
Poetsch, Eike: *See—*
Hausberg, Hans-Heinrich; Koppe, Volker; Poetsch, Eike; Saiko, Otto; and Seyfried, Christoph, 4,251,538, Cl. 424-267.000.
Polaroid Corporation: *See—*
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,251,617, Cl. 430-234.000.
Plummer, William T., 4,251,146, Cl. 354-53.000.
Polgari, Istvan: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Pollert, Georg: *See—*
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Polonsky, Jury A.: *See—*
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.
Ponedelko, Vladimir N.: *See—*
Vinokurov, Alexandr A.; Zhukovsky, Alexandr V.; Zotov, Igor L.; Popov, Jury S.; Filippov, Iosif F.; and Ponedelko, Vladimir N., 4,250,744, Cl. 73-118.000.
Ponticello, Gerald S.: *See—*
Baldwin, John J.; and Ponticello, Gerald S., 4,251,663, Cl. 546-303.000.
Popeil Brothers, Inc.: *See—*
Gename, John L., 4,251,038, Cl. 242-86.000.
Popiashvili, Shalva V.: *See—*
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.
Popov, Jury S.: *See—*
Vinokurov, Alexandr A.; Zhukovsky, Alexandr V.; Zotov, Igor L.; Popov, Jury S.; Filippov, Iosif F.; and Ponedelko, Vladimir N., 4,250,744, Cl. 73-118.000.
Porsche, William E.: *See—*
Boyson, Bert; Gallagher, Terence J.; and Porsche, William E., 4,250,806, Cl. 101-2.000.
Post, Martin F. M.: *See—*
Nanne, Johannes M.; Post, Martin F. M.; and Stork, Willem H. J., 4,251,499, Cl. 423-329.000.
Povall, William H.: *See—*
Dell, William J.; Flango, William E., Jr.; Povall, William H.; Freed, Lawrence H.; and Fencl, Susan D., 4,251,560, Cl. 426-565.000.
Powell, Richard M.: *See—*
Hartlaub, . ome T.; Smith, Bobby L.; and Powell, Richard M., 4,250,884, Cl. 128-419.0PT.
Power Management Corporation: *See—*
Hancock, Harold E., 4,251,845, Cl. 361-8.000.
PPG Industries, Inc.: *See—*
Retallack, Robert L., 4,251,338, Cl. 204-130.000.
Welch, Cletus N.; and Snodgrass, John O., 4,251,478, Cl. 204-98.000.
Pratt, George W.; Chapple, Thomas W.; and Fahy, Michael J., to Kurth Malting Corporation. Preparation of malt high in alpha-1,6-hydrolase. 4,251,630, Cl. 435-98.000.
Preble, Alan C.: *See—*
Chatfield, David A.; Rzepka, Joseph F.; and Preble, Alan C., 4,251,294, Cl. 148-120.000.
Preceptor Golf Ltd.: *See—*
Pelz, David T.; and Huegel, Frederick G., 4,251,077, Cl. 273-186.00A.
Preiss, Michael: *See—*
Feyen, Peter; Preiss, Michael; and Metzger, Karl G., 4,251,524, Cl. 424-226.000.
Presby, Benedict F., to Knoll International Inc. Panel interconnecting and upholstery-retaining connection for a tubular frame. 4,250,676, Cl. 52-222.000.
Prestl, Karl: *See—*
Zinsser, Rudolf; and Prestl, Karl, 4,251,189, Cl. 416-240.000.
Preziuso, Ciro; Radice, Marco; Siddi, Giorgio; and Signorini, Ernesto, to Montedison S.p.A. Synergistic compositions of fusicoccyn and herbicides. 4,251,259, Cl. 71-88.000.
Price, David W.: *See—*
Davison, Joseph A.; Hall, Graham W.; Hodges, Newton J.; and Price, David W., 4,251,413, Cl. 260-29.6MM.
Priebe, Hermann: *See—*
Kniprath, Elmar; Mrusek, Gerd; Priebe, Hermann; and Reppenhagen, Claus, 4,251,489, Cl. 423-41.000.
Princevalle, Robert. Sailing aid. 4,250,635, Cl. 434-60.000.
Prior, Allan S.: *See—*
Schwartz, Gerhardt T.; and Prior, Allan S., 4,251,826, Cl. 346-163.000.
Procter & Gamble Company, The: *See—*
Owens, William A.; and Williams, Alvester, Jr., 4,251,012, Cl. 222-185.000.
Proctor, Richard I., to Elaine Powers Nutrition Company, Inc. Meal replacement composition. 4,251,550, Cl. 426-72.000.
Prunbauer, Kurt, to Evva Werk Spezialerzeugung von Zylinder- und Sicherheitsschlossern Gesellschaft m.b.H. & Co. Control device. 4,250,725, Cl. 70-276.000.
Prydtz, Ole: *See—*
Lorenzen, Peder; Nielsen, Jacob A.; and Prydtz, Ole, 4,250,690, Cl. 53-475.000.
Publishers Equipment Corporation: *See—*
Pullen, Donald A., 4,250,809, Cl. 101-177.000.
Puchovsky, Melicher, to Morgan Construction Company. Coil forming apparatus with axially adjustable mandrels. 4,251,037, Cl. 242-81.000.
Pugach, Joseph, to Halcon Research and Development Corporation. Process for preparing carboxylic acid anhydrides. 4,251,458, Cl. 260-546.000.
Pullen, Donald A., to Publishers Equipment Corporation. Perfecting or multicolor offset printing press. 4,250,809, Cl. 101-177.000.
Pullman Incorporated: *See—*
Stark, Marvin; Suvada, Steve L.; and Aquino, Herman A., 4,250,814, Cl. 105-251.000.
Pullman Incorporated, Pullman Swindell Division: *See—*
Angevine, John S.; Frame, Scott W.; and Yacura, Stephen B., 4,250,816, Cl. 110-101.0CF.
Pummer, Helmut: *See—*
Danner, Bernard; Gerber, Hans; and Pummer, Helmut, 4,251,410, Cl. 260-29.40A.
Pusateri, James J.; and Masie, James R., to Park-Ohio Industries, Inc. Inductor for axially and circumferentially heating a rotating workpiece. 4,251,707, Cl. 219-10.790.
Quaker Oats Company, The: *See—*
Burkwall, Morris P., Jr.; Leyh, Joseph C., Jr.; and Reagan, John G., 4,251,556, Cl. 426-332.000.
Queck, Robert: *See—*
Ebert, Hans; Kerber, Hans; and Queck, Robert, 4,251,682, Cl. 174-31.500.
Quenneville, Raymond N.; and Custer, Dennis R., to Jacobs Manufacturing Company, The. Solenoid structure having a relatively unrestrained generally flat armature member. 4,251,051, Cl. 251-129.000.
Quest Medical, Inc.: *See—*
Smith, Gordon E., 4,250,881, Cl. 128-214.400.
Quimby, Daniel J., to Union Carbide Corporation. Preparation of 2-trifluoromethyl cinchoninic acids. 4,251,661, Cl. 546-170.000.
Raab, Andrew F.; and Halstead, Raymond T., to Indak Manufacturing Corp. Electrical and fluid control switches. 4,251,698, Cl. 200-61.860.
Rabinovitch, Maurice; and Magnier, Pierre, to Office National d'Etudes et de Recherches Aerospatiales; and Microfusion S.A. Method of manufacturing of a metallurgical mould. 4,250,943, Cl. 164-35.000.
Rackley, Robert L.: *See—*
Goetemann, Gerald B.; and Rackley, Robert L., 4,251,588, Cl. 428-224.000.
Radek, John R., to Ready Metal Manufacturing Company. Light cornice. 4,251,855, Cl. 362-151.000.
Radice, Marco: *See—*
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Raisanen, Jouko: *See—*
Jarvenpaa, Kauko; Leinonen, Pertti; and Raisanen, Jouko, 4,250,627, Cl. 33-364.000.
Rakestraw, Roy R. Supporting structure for plants. 4,250,666, Cl. 47-83.000.
Ralston Purina Company: *See—*
Moore, Wayne R.; and Mann, Debra K., 4,251,518, Cl. 424-180.000.
Ralston, Richard W., Jr., to Olin Corporation. Method for detecting incipient short circuits in electrolytic cells. 4,251,336, Cl. 204-99.000.
Ramme, Clarence. Lighted fish lure. 4,250,651, Cl. 43-17.600.
Ramsey Corporation: *See—*
McCormick, Harold, 4,251,599, Cl. 428-682.000.
Randall Corporation, The: *See—*
Gulsby, Jerry G., 4,251,249, Cl. 62-28.000.
Randell, Donald R.; and Phillips, Emyr, to Ciba-Geigy Corporation. Gas purification process. 4,251,493, Cl. 423-226.000.
Rasmussen, Chris R.: *See—*
Scott, Malcolm K.; and Rasmussen, Chris R., 4,251,655, Cl. 542-415.000.
Rasmussen, Mirella E.; Jensen, Jorgen V.; and Hansen, Jorgen F., to Nordisk Insulinlaboratorium. Process for producing an antihemophilic factor preparation from human blood plasma by irradiating with electromagnetic waves. 4,251,437, Cl. 260-112.00B.
Rathbun, Charles D. Pattern and threshold speed calculator. 4,251,721, Cl. 235-78.00R.
Rathke, Ralph E.: *See—*
Drott, Edward R.; Christenson, John C.; and Rathke, Ralph E., 4,251,181, Cl. 414-723.000.
Ratliff, Frank W. Heat transfer systems. 4,250,715, Cl. 62-175.000.
Rauch, Gary C.: *See—*
Foster, Karl; Thornburg, Donald R.; and Rauch, Gary C., 4,251,295, Cl. 148-120.000.
Thornburg, Donald R.; Rauch, Gary C.; and Foster, Karl, 4,251,296, Cl. 148-120.000.
Rausch, Maurice K.; Erickson, Henry, deceased; by Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., to Atlantic Richfield Company. White mineral oil made by two stage hydrogenation. 4,251,347, Cl. 208-57.000.

Raychem Corporation: *See*—
Campbell, Bruce D.; and Lopez, Eugene F., 4,251,304, Cl. 156-85.000.
Raytheon Company: *See*—
Altnau, Ronald L., 4,250,724, Cl. 68-23.200.
Bryden, Joseph E., 4,251,755, Cl. 315-383.000.
RCA Corporation: *See*—
Ahmed, Adel A. A., 4,251,778, Cl. 330-279.000.
Beelitz, Howard R., 4,251,742, Cl. 307-270.000.
Berkman, Samuel; Metzl, Robert; Novak, Richard E.; and Patterson, David L., 4,251,206, Cl. 432-5.000.
Fernsler, Ronald E.; and Willis, Donald H., 4,251,833, Cl. 358-148.000.
Knop, Karl; and Kane, James, 4,251,137, Cl. 350-347.00V.
Willis, Donald H., 4,251,756, Cl. 315-411.000.
Wittlinger, Harold A., 4,251,811, Cl. 340-636.000.
Ready Metal Manufacturing Company: *See*—
Radek, John R., 4,251,855, Cl. 362-151.000.
Reagan, John G.: *See*—
Burkwall, Morris P., Jr.; Leyh, Joseph C., Jr.; and Reagan, John G., 4,251,556, Cl. 426-332.000.
Recker, Klaus; and Reinecke, Gerd, to Bayer Aktiengesellschaft. Coating compositions from polyurethanes containing a molecular sieve of the sodium aluminum silicate type. 4,251,427, Cl. 260-37.00N.
Recker, Klaus; Reinecke, Gerd; and Kraft, Karl, to Bayer Aktiengesellschaft. Thermosetting molding compositions containing polyurethane and a fibrous material, and a process for the production of moldings. 4,251,428, Cl. 260-37.00N.
Recognition Equipment Incorporated: *See*—
Sanner, Medford D.; and Cave, Ellis K., 4,251,800, Cl. 340-146.3SY.
Recreation Systems Co.: *See*—
Beller, Frank W., 4,251,069, Cl. 272-113.000.
Rees, David H.; and Hickey, Gerald A. Method of supporting the growth of grass, flowering plants, shrubs and decorative plants. 4,250,662, Cl. 47-58.000.
Rees, Frederick H.; and Bleicher, Dan, to Standard Telephones and Cables Limited. Data storage systems. 4,251,684, Cl. 178-3.000.
Rees, Richard W., to Du Pont de Nemours, E. I., and Company. Process for sizing filament yarn utilizing an improved warp size composition of PVal, urea and saccharide. 4,251,403, Cl. 260-17.4SG.
Regan, Michael T.: *See*—
Nonnemacher, James R.; Regan, Michael T.; and Webster, Frank G., 4,251,609, Cl. 430-9.000.
Regel, Erik; Draber, Wilfried; Buchel, Karl H.; Kraus, Peter; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Combating crop damaging fungi with α-(4-biphenylyl)-benzyl-azolium salts. 4,251,540, Cl. 424-273.00R.
Regie Nationale des Usines Renault: *See*—
Mollet, Philippe; and Milliot, Henri, 4,250,847, Cl. 123-568.000.
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, to Robert Bosch GmbH. Particulate material intercepting arrangement for a hand-held tool. 4,250,971, Cl. 173-21.000.
Reif, Alfred. Miniature blade device. 4,250,625, Cl. 30-383.000.
Reimpell, Uwe: *See*—
Grof, Helmut; Wamser, Anton; and Reimpell, Uwe, 4,251,678, Cl. 13-14.000.
Reinecke, Gerd: *See*—
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Recker, Klaus; Reinecke, Gerd; and Kraft, Karl, 4,251,428, Cl. 260-37.00N.
Reischl, Artur, to Bayer Aktiengesellschaft. Suspensions of isocyanate distillation residues in polyols. 4,251,401, Cl. 260-9.000.
Reischl, Artur, to Bayer Aktiengesellschaft. Process for the production of polyurethane plastics. 4,251,638, Cl. 521-128.000.
Remke, Adam R. Wire basket. 4,250,664, Cl. 47-76.000.
Remlinger, George W.; and Kreider, Arthur K. Heat control member and method. 4,250,954, Cl. 165-1.000.
Reppenhagen, Claus: *See*—
Kniprath, Elmar; Mrusek, Gerd; Priebe, Hermann; and Reppenhagen, Claus, 4,251,489, Cl. 423-41.000.
Research Institute for Advanced Technology: *See*—
Telkes, Maria, 4,250,866, Cl. 126-116.00A.
Research Products Rehovot Ltd.: *See*—
Simon, Shulamith, 4,251,631, Cl. 435-106.000.
Resnick, Bruce M., to GAF Corporation. Fungicidal process using 1-(alkylacyl) guanidines. 4,251,544, Cl. 424-320.000.
Resnick, Bruce M., to GAF Corporation. Fungicidal process using 1-(alkoxyaroyl)guanidines. 4,251,545, Cl. 424-324.000.
Retallack, Robert L., to PPG Industries, Inc. Electrolytic recovery of lithium from brines. 4,251,338, Cl. 204-130.000.
Rey-Bellet, Gerald: *See*—
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,251,454, Cl. 260-465.00E.
Reynolds, Kenneth E., to Mine Safety Appliances Company. Side loading filter apparatus. 4,251,245, Cl. 55-481.000.
Reynolds Metals Company: *See*—
Stratton, Claud L.; and Kane, James F., 4,251,265, Cl. 75-3.000.
Rhone-Poulenc Industries: *See*—
Machurat, Jean; Morawski, Jean-Claude; and Vrisakis, Georges, 4,251,281, Cl. 106-288.00B.
Rich, Michael; and Eldracher, Konrad, to Eastfield Corporation. Mist generating structure and molding apparatus therefor. 4,251,033, Cl. 239-338.000.
Richard Wolf GmbH: *See*—
Bonnet, Ludwig, 4,250,873, Cl. 128-7.000.
Richner, Hans, to Hatebur Umformmaschinen AG. Device for the ejection of a shaped workpiece at the male die on a cross-feed press for non-cutting metal shaping. 4,250,730, Cl. 72-344.000.
Richter Gedeon Vegyeszeti Gyar Rt.: *See*—
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Rico Gonzalez, Cesar, to Amper, S.A. Keypad for telephones. 4,251,697, Cl. 200-5.00A.
Ricoh Company, Ltd.: *See*—
Fujii, Tadashi, 4,251,827, Cl. 346-165.000.
Hara, Kazuyuki; and Kamada, Takeshi, 4,251,822, Cl. 346-139.00C.
Miyakawa, Seiichi; and Yano, Takashi, 4,251,152, Cl. 355-3.00R.
Sakamoto, Hiroshi; Nomura, Minoru; and Hagiri, Minoru, 4,251,593, Cl. 428-411.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,614, Cl. 430-79.000.
Riddleberger, Dennis M.: *See*—
Satterthwaite, J. Glenn; and Riddleberger, Dennis M., 4,250,926, Cl. 138-90.000.
Riehle, Harald. Planning aid. 4,250,642, Cl. 40-160.000.
Riemersma, Pieter: *See*—
Bakker, Eppe; and Riemersma, Pieter, 4,250,617, Cl. 30-34.200.
Riganti, Luciano: *See*—
Maniglia, Carmelo, 4,251,056, Cl. 254-8.00B.
Rikuta, Sotokazu. Automatic controlling valve for maintaining the rate of fluid flow at a constant value. 4,250,915, Cl. 137-501.000.
Rintala, Esa: *See*—
Lillbacka, Jorma; and Rintala, Esa, 4,250,607, Cl. 29-237.000.
Riordan, Roger H. S.: *See*—
Chatwin, Ian M.; and Riordan, Roger H. S., 4,251,035, Cl. 241-37.000.
Rippe, Delfin F., to American Hospital Supply Corporation. Insolubilized deoxyribonucleic acid (DNA). 4,251,514, Cl. 424-8.000.
Riso, Rhea R.; and Memoli, Richard E. Orthotic. 4,250,886, Cl. 128-621.000.
Rivier, Paul; Bucari, Claude; Topalian, Samuel; and Baud, Alain, to Jamet, Andre. Folding caravan of tent canvas. 4,250,906, Cl. 135-1.00A.
Robbins, Ernest A.; and Seeley, Robert D., to Anheuser-Busch, Incorporated. Process for the prevention and reduction of elevated blood cholesterol and triglycerides levels. 4,251,519, Cl. 424-180.000.
Robbins, Michael: *See*—
Earl, Hugh E.; and Robbins, Michael, 4,251,079, Cl. 273-428.000.
Robert Bosch GmbH: *See*—
Barthruff, Otto; Mayer, Martin; and Sprenger, Martin, 4,251,788, Cl. 335-157.000.
Bragas, Peter; and Eschke, Bernd, 4,251,797, Cl. 340-32.000.
Hertfelder, Wilhelm; and Junginger, Erich, 4,251,052, Cl. 251-129.000.
Hoyler, Alfred; and Niklaus, Bernd, 4,250,984, Cl. 192-12.00D.
Jeenicke, Edmund; Klotzner, Winfried; Meichle, Clemens; Schenk, Manfred; and Gorille, Ingo, 4,250,858, Cl. 123-480.000.
Knodler, Jurgen, 4,251,774, Cl. 324-384.000.
Niklaus, Bernd; Braun, Manfred; and Maier, Roland, 4,250,765, Cl. 74-388.0PS.
Pagel, Ernst-Olav; and Vetter, Hermann, 4,251,847, Cl. 361-91.000.
Reibetanz, Wilbert; Sigg, Horst; Wiesner, Herbert; Wanner, Karl; Hansel, Gernot; Seitz, Karl; and Bleicher, Manfred, 4,250,971, Cl. 173-21.000.
Wessel, Wolf; Stumpp, Gerhard; and Stein, Volkhard, 4,250,848, Cl. 123-452.000.
Will, Gerhard; and Stroh, Walter, 4,250,922, Cl. 137-625.650.
Roberts, Michael G.: *See*—
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,577, Cl. 428-378.000.
Marzocchi, Alfred; Roberts, Michael G.; and Bolen, Charles E., 4,251,586, Cl. 428-220.000.
Robertshaw Controls Company: *See*—
Kranz, Max L., 4,250,876, Cl. 128-202.220.
Robertson, Thomas: *See*—
Kennedy-Skipton, Henry K.; and Robertson, Thomas, 4,251,430, Cl. 260-40.00R.
Robertson, Willard A., Jr. Handlebar assembly. 4,250,770, Cl. 74-551.800.
Robinson, Ivan M.; and Pechhold, Engelbert, to Du Pont de Nemours, E. I., and Company. Copolyether glycols of tetrahydrofuran and alkylene oxides having low oligomeric cyclic ether content. 4,251,654, Cl. 528-417.000.
Robinson, Leon H., Jr.: *See*—
Heilhecker, Joe K.; Robinson, Leon H., Jr.; and Peters, Beldon A., 4,250,974, Cl. 175-48.000.
Roccaforte, Harry I.; and Dewiggins, Richard J., to Champion International Corporation. Carton for container and cap. 4,250,993, Cl. 206-216.000.
Rochman, Tzur. Arrangement for opening plastic bags in automatic packaging machines. 4,250,694, Cl. 53-572.000.
Rockwell International Corporation: *See*—
Bynum, Brian T., 4,251,782, Cl. 333-18.000.

Rockwool Aktiebolag: *See—*
Cederqvist, Gunnar N.; and Aberg, Ulf L., 4,251,320, Cl. 162-55.000.
Rode, Oyars A.: *See—*
Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y., 4,251,138, Cl. 350-357.000.
Rodon, Frank: *See—*
Pappalardo, P. Paul; Conway, Carle C.; and Rodon, Frank, 4,250,698, Cl. 56-202.000.
Roeder, Georg; and Sachs, Helmut, to Messer Griesheim GmbH. Device for igniting the fuel gas of a flame cutting machine. 4,251,205, Cl. 431-263.000.
Roepke, Wallace W., to United States of America, Interior. Dust controlling method using a coal cutter bit. 4,251,109, Cl. 299-12.000.
Rohde, Wolfgang: *See—*
Beck, Kurt-Gunther; Pollert, Georg; and Rohde, Wolfgang, 4,251,207, Cl. 432-14.000.
Rohe, Bruno: *See—*
Deigmuller, Gunter; Munk, Andreas; Rohe, Bruno; and Strunk, Manfred, 4,250,792, Cl. 86-1.00R.
Rohm and Haas Company: *See—*
Aller, Harold E.; and Hansen, Carl O., 4,251,523, Cl. 424-225.000.
Emmens, William D.; and Feely, Wayne E., 4,251,597, Cl. 428-500.000.
Rolandelli, Paul J. Adjustable safety seat for ambulances and other emergency vehicles. 4,251,100, Cl. 296-63.000.
Roller, Erling: *See—*
Feuchter, Franz-Peter; Roller, Erling; and Giertz, Klaus-Walter, 4,250,948, Cl. 164-269.000.
Rolls-Royce Motors Limited: *See—*
Stock, Malcolm G., 4,251,096, Cl. 293-150.000.
Romaniec, Charles. Production of a substantially inert flexible textile material. 4,251,589, Cl. 428-263.000.
Romeo, Ciriaco: *See—*
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
Rooney, Terence R., to Albright & Wilson Ltd. Aluminum polishing compositions. 4,251,384, Cl. 252-147.000.
Rorabaugh, Gene L.: *See—*
Custer, Michael D.; and Rorabaugh, Gene L., 4,250,618, Cl. 30-114.000.
Rosenberg, William E., to Columbia Chemical Corporation. Baths and additives for the electroplating of bright zinc. 4,251,331, Cl. 204-55.00R.
Rosenthal, Fritz, to SCM Corporation. Viscosity stabilized photoconductive coating material and sheet material using same. 4,251,615, Cl. 430-89.000.
Roteman, Robert, to Abbott Laboratories. 1-(4-Amino-6,7-dimethoxy-2-quinazolinyl)-4-(2-tetrahydrofuroyl)piperazine hydrochloride dihydrate. 4,251,532, Cl. 424-251.000.
Rotex, Inc.: *See—*
Lower, William E., 4,251,354, Cl. 209-240.000.
Rothen, Johann; and Singbartl, Gunther, to WABCO Westinghouse GmbH. Switching circuit for the disabling of spurious sensor signals. 4,251,118, Cl. 303-91.000.
Rothenberg, Robert A.: *See—*
Mayer, Carl P.; and Rothenberg, Robert A., 4,251,734, Cl. 290-5.000.
Rothenberger, Roland D., to Sperry Corporation. Apparatus for correction of memory errors. 4,251,863, Cl. 364-200.000.
Rotzoll, Rudi-Heinz: *See—*
Eckell, Albrecht; Matthies, Paul; Pilz, Georg; and Rotzoll, Rudi-Heinz, 4,251,653, Cl. 528-335.000.
Rowenta-Werke GmbH: *See—*
Wohlfart, Kurt, 4,250,803, Cl. 99-409.000.
Royalty Investors: *See—*
Hansen, H. Gordon, 4,251,087, Cl. 280-11.280.
Roza, Engel, to U.S. Philips Corporation. Transmission system for the transmission of data pulses. 4,251,886, Cl. 375-18.000.
Ruben, Samuel. Lead-sulfuric acid battery with stainless steel or titanium grid. 4,251,608, Cl. 429-205.000.
Rubio, Manuel J. Apparatus for converting grain into dough. 4,250,802, Cl. 99-348.000.
Rubright, Kent A.; Magill, William C.; Meier, Spencer I.; and Loeffler, Romain E., deceased (by Loeffler, Carolyn R., personal representative), to Johns-Manville Corporation. High temperature pipe insulation. 4,251,590, Cl. 428-285.000.
Rude, Kennon G. Therapeutic neck tractioning device. 4,250,874, Cl. 128-75.000.
Rudolph, Hans: *See—*
Mietzsch, Fritz; Rudolph, Hans; Wolfers, Heinrich; and Alberts, Heinrich, 4,251,650, Cl. 526-194.000.
Ruether, Peter G.; and Vachon, Patrick A., to Storage Technology Corporation. Centralized automatic gain control circuit. 4,251,881, Cl. 370-98.000.
Ruf, Wolfgang: *See—*
Lermann, Peter; Wagensonner, Eduard; and Ruf, Wolfgang, 4,251,142, Cl. 354-23.00D.
Ruhl, John H.; and Dixon, Richard D., to Huck Manufacturing Company. Fastening system including segmented self releasing anvil. 4,250,733, Cl. 72-391.000.
Ruhrkohle Aktiengesellschaft: *See—*
Nocke, Hermann H., 4,251,108, Cl. 299-8.000.
Rundell, Herbert A.: *See—*
Pitts, Robert W., Jr.; Rundell, Herbert A.; and Nussbaum, Theodore W., 4,250,758, Cl. 73-650.000.
Russel, Matthew J., to Eastman Kodak Company. Electrophotographic color copier. 4,251,154, Cl. 355-4.000.
Russell, James A.: *See—*
Marsh, Christopher R.; and Russell, James A., 4,251,325, Cl. 203-2.000.
Russell, Ronald R.; and Aitken, Donald F., Jr., to General Electric Company. Circuit breaker trip indicator and auxiliary switch combination. 4,251,789, Cl. 335-174.000.
Russell, Sid, to United Technologies Corporation. Fuel-dissociation electrical current generating apparatus and method. 4,251,601, Cl. 429-17.000.
Rustioni, Massimo: *See—*
Balducci, Luigi; and Rustioni, Massimo, 4,251,283, Cl. 106-296.000.
Ruyer, Charles. Reduced load working cycle for a four-stroke combustion engine and engines using said cycle. 4,250,850, Cl. 123-198.00F.
Ryan, James W.; and Chung, Alfred, to Ventrex Laboratories, Inc. Substrates for angiotensin converting enzyme. 4,251,628, Cl. 435-24.000.
Ryder, Francis E., to Ryder International Corporation. Contact lens disinfector with temperature indicator. 4,251,719, Cl. 219-521.000.
Ryder International Corporation: *See—*
Ryder, Francis E., 4,251,719, Cl. 219-521.000.
Rzepka, Joseph F.: *See—*
Chatfield, David A.; Rzepka, Joseph F.; and Preble, Alan C., 4,251,294, Cl. 148-120.000.
S & C Electric Company: *See—*
Wiltgen, Bernard M., Jr., 4,251,699, Cl. 200-144.00C.
S.S.S. Patents Limited: *See—*
Clements, Herbert A., 4,250,985, Cl. 192-48.700.
Saari, Walfred S.; and Lumma, William C., to Merck & Co., Inc. 2-{[4-(6-Substituted-2-pyrazinyl)-1-piperazinyl]alkyl}-5-substituted-1,2,4-triazolo[4,3-a]pyridin-3(2H)-one analgesic agents. 4,251,530, Cl. 424-250.000.
Sachdev, Krishna G.: *See—*
Bloom, Stanley M., deceased; and Sachdev, Krishna G., 4,251,617, Cl. 430-234.000.
Sachs, Helmut: *See—*
Roeder, Georg; and Sachs, Helmut, 4,251,205, Cl. 431-263.000.
Sachser, Herbert, to Albert Schulte Sohne KG. Caster wheel for a carrying apparatus such as a shopping cart and the like. 4,250,593, Cl. 16-45.000.
Sack GmbH: *See—*
Hansen, Manfred W., 4,251,180, Cl. 414-560.000.
Sack & Kiesselbach Maschinenfabrik, GmbH: *See—*
Cremer, Kurt H. L., 4,250,731, Cl. 72-354.000.
Sadoski, Tadius T.: *See—*
Gallien, John P.; Mackey, Francis P.; Sadoski, Tadius T.; and Taubner, Fred R., 4,251,750, Cl. 313-487.000.
Saeki, Keiso; Matsukawa, Hiroharu; and Satomura, Masato, to Fuji Photo Film Co., Ltd. Method for preparing microcapsules. 4,251,386, Cl. 252-316.000.
Safian, Matvei M.; Babich, Eduard A.; Dolzhenkov, Boris S.; and Esaulenko, Valery D. Sheet rolling method. 4,250,726, Cl. 72-38.000.
Sagae, Syoji, to Hitachi, Ltd.; and Hitachi Koki Co., Ltd. Ink jet recording apparatus. 4,251,823, Cl. 346-140.00R.
Saiko, Otto: *See—*
Hausberg, Hans-Heinrich; Koppe, Volker; Poetsch, Eike; Saiko, Otto; and Seyfried, Christoph, 4,251,538, Cl. 424-267.000.
Saita, Yuzo: *See—*
Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, 4,251,269, Cl. 75-60.000.
Hoshi, Fumio; Saita, Yuzo; and Fujisawa, Akira, 4,251,270, Cl. 75-60.000.
Saito, Etsuro, to Sony Corporation. Auto-tracking control system for use in apparatus for reproducing a video signal recorded in successive parallel tracks on a recording medium. 4,251,838, Cl. 360-77.000.
Saito, Katushi: *See—*
Asano, Hidejiro; Oka, Joji; Saito, Katushi; and Takasugi, Masashi, 4,251,329, Cl. 204-27.000.
Saito, Shin: *See—*
Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, 4,251,622, Cl. 430-332.000.
Sakaguchi, Hiroo: *See—*
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,251,791, Cl. 335-302.000.
Sakai, Kiyoshi: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,614, Cl. 430-79.000.
Sakakibara, Naoji; Hashimoto, Nobuyuki; and Watanabe, Tsukasa, to Aisin Seiki Kabushiki Kaisha. Electromagnetic control valve assembly. 4,250,924, Cl. 137-868.000.
Sakamoto, Hiroshi; Nomura, Minoru; and Hagiri, Minoru, to Ricoh Company, Ltd. Heat-sensitive recording sheet. 4,251,593, Cl. 428-411.000.
Sakamoto, Seiya; and Hohki, Tetsuo, to Dainippon Screen Seizo Kabushiki Kaisha. Method of producing a halftone picture by vibrating light source. 4,251,625, Cl. 430-396.000.
Sakashi, Shoei: *See—*
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Sakuma, Fumio: *See*—
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, 4,251,796, Cl. 338-176.000.
Sakurai, Junji, to Fujitsu Limited. Semiconductor device and process for producing the same. 4,251,828, Cl. 357-23.000.
Salee, Gideon, to Hooker Chemicals & Plastics Corp. Polymer blends with improved flame retardance. 4,251,429, Cl. 260-40.00R.
Salete-Garces, Felipe. Induction cyclonic separator. 4,251,243, Cl. 55-261.000.
Salley, Gordon L.; and Swales, Barton L., to Deere & Company. Variably positionable transmission and drive assembly for a planter. 4,251,014, Cl. 222-615.000.
Samueloff, Shlomo: *See*—
Carlson, Walter S.; Samueloff, Shlomo; and Wasserman, Donald E., 4,250,891, Cl. 128-744.000.
Sanderson, Roger S.; and Whelchel, Robert C., to Sanderson, Roger S. Sterilized storage container. 4,251,482, Cl. 422-26.000.
Sandoz, Inc.: *See*—
Kathawala, Faizulla G., 4,251,521, Cl. 424-185.000.
Sandoz Ltd.: *See*—
Danner, Bernard; Gerber, Hans; and Pummer, Helmut, 4,251,410, Cl. 260-29.40A.
Kaeppeli, Viktor, 4,251,440, Cl. 260-146.00R.
Maurer, Gerard; and Kiechel, Jean-Rene, 4,251,529, Cl. 424-250.000.
Sanner, Medford D.; and Cave, Ellis K., to Recognition Equipment Incorporated. Tilt compensating AGC. 4,251,800, Cl. 340-146.3SY.
Santek, Inc.: *See*—
Michel, Thomas J., 4,251,775, Cl. 324-464.000.
Santora, Scott A., to Waste Conversion Technology, Inc. Wastewater treatment. 4,251,367, Cl. 210-702.000.
Sara, Raymond V., to Union Carbide Corporation. Oxidation resistant porous abradable seal member for high temperature service. 4,251,272, Cl. 75-200.000.
Sartorius, Wilfried; and Stock, Don J. R., to Endress u. Hauser GmbH u. Co. Method of and apparatus for time-stabilization of sampling pulses. 4,251,777, Cl. 328-155.000.
Sasajima, Michitada: *See*—
Amano, Takehiro; Sawada, Jiro; and Sasajima, Michitada, 4,251,543, Cl. 424-317.000.
Sasaki, Hyoichi: *See*—
Tezuka, Kazumasa; Hisano, Seiichi; Sasaki, Hyoichi; and Watanabe, Ikuo, 4,251,497, Cl. 423-242.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Disazo compounds, process for preparation of same and application of said disazo compounds and analogues thereof to electrophotographic sensitive materials. 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, to Ricoh Company, Ltd. Novel disazo compounds, process for the preparation of same and application of said disazo compounds and analogues thereof to electrophotographic sensitive materials. 4,251,614, Cl. 430-79.000.
Sasol One (Proprietary) Limited: *See*—
Dry, Leonard J.; Kleynjan, Cornelius; and Beukes, Quintin J., 4,251,346, Cl. 208-10.000.
Satler, Walter L., to McDonnell Douglas Corporation. Roller hold down. 4,251,174, Cl. 409-137.000.
Sato, Akio: *See*—
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Sato, Akira; and Isobe, Takashi, to Canon Kabushiki Kaisha. Bayonet safety mechanism for camera lens mount. 4,251,134, Cl. 350-257.000.
Sato, Hidetoshi: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,251,695, Cl. 369-136.000.
Sato, Kazuhiro: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,251,695, Cl. 369-136.000.
Sato, Reiji, to Sugatsune Industrial Co., Ltd. Collapsible reclining chair. 4,251,107, Cl. 297-19.000.
Sato, Yasushi: *See*—
Hara, Toshitami; Sato, Yasushi; Takatori, Yasushi; and Shirato, Yoshiaki, 4,251,824, Cl. 346-140.00R.
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Satter, Abdus: *See*—
Morse, Everett W.; and Satter, Abdus, 4,250,961, Cl. 166-252.000.
Satterthwaite, J. Glenn; and Riddleberger, Dennis M. Closure device with peripheral double acting inflatable seal. 4,250,926, Cl. 138-90.000.
Satzinger, Walter: *See*—
Kalbitz, Wolfgang; Keyl, Erwin; Satzinger, Walter; and Wichert, Hans, 4,251,850, Cl. 361-331.000.
Saucedo, Edward. Key cutter. 4,251,173, Cl. 409-82.000.
Sauerwein, William D.; and Walton, Richard E., II, to Black & Decker Inc. Method of assembling a commutator brush system. 4,250,613, Cl. 29-597.000.
Saurenman, Donald G., to Consan Pacific Incorporated. Ion enhanced smoke treatment of edibles. 4,250,804, Cl. 99-451.000.
Sauterey, Daniel: *See*—
Fournet, Gaston; Gueroult, Alain; and Sauterey, Daniel, 4,251,549, Cl. 426-19.000.
Sawada, Jiro: *See*—
Amano, Takehiro; Sawada, Jiro; and Sasajima, Michitada, 4,251,543, Cl. 424-317.000.
Sawyer, Edgar W., Jr., to International Telephone and Telegraph Corporation. Coal suspensions in organic liquids. 4,251,230, Cl. 44-51.000.
Say, Geoffrey R., to Exxon Research & Engineering Co. Process for removing acidic compounds from gaseous mixtures using a two liquid phase scrubbing solution. 4,251,494, Cl. 423-228.000.
Sazhin, Dmitry S.: *See*—
Andreev, Evgeny I.; Bykov, Mikhail A.; Zolotarev, Anatoly K.; and Sazhin, Dmitry S., 4,250,929, Cl. 137-607.000.
Sberze, Piero: *See*—
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
SCAL Societe de Conditionnements en Aluminium: *See*—
Baril, Jacques; Gaborieau, Jean-Yves; and Lheureux, Philippe, 4,250,727, Cl. 72-46.000.
Scardina, Mark V.; and Bergen, David A. Delta modulation utilizing selectable piecewise linear waveform approximation. 4,251,804, Cl. 340-347.00R.
Scarpati, Thomas S.: *See*—
Class, Charles A.; and Scarpati, Thomas S., 4,251,309, Cl. 156-245.000.
Schaar, Lothar: *See*—
Becker, Kurt; and Schaar, Lothar, 4,251,253, Cl. 65-267.000.
Schael, Wilfried: *See*—
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Schampers, Paulus P. M.: *See*—
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Schauer, Dennis J.: *See*—
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Schauer, John M.; and Schauer, Dennis J. Apparatus for cleansing noxious constituents from gas streams. 4,251,485, Cl. 422-168.000.
Scheer, Erich, to KUNDO-Kieninger & Obergfell. Clock, especially striker clock. 4,251,877, Cl. 368-251.000.
Scheiber, David H., to Du Pont de Nemours, E. I., and Company. Vehicle for thick film resistors fireable in nonoxidizing atmosphere. 4,251,397, Cl. 252-521.000.
Scheinecker, Alois; Scheurecker, Werner; and Hargassner, Reinhard, to Voest-Alpine Aktiengesellschaft. Strand guiding means for guiding a strand in a continuous casting plant. 4,250,952, Cl. 164-448.000.
Scheinpflug, Hans: *See*—
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Wagner, Kuno; Niggemann, Johanness; Findeisen, Kurt; and Scheinpflug, Hans, 4,251,255, Cl. 71-27.000.
Schenck-Auto-Service-Gerate GmbH: *See*—
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Schenk, Manfred: *See*—
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Schenk, Walter: *See*—
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Scherer, Richard M., to Chambers Corporation. Easy access oven control panel and panel seal. 4,250,865, Cl. 126-41.00D.
Schering AG: *See*—
Nusslein, Ludwig; and Arndt, Friedrich, 4,251,260, Cl. 71-90.000.
Scheurecker, Werner: *See*—
Scheinecker, Alois; Scheurecker, Werner; and Hargassner, Reinhard, 4,250,952, Cl. 164-448.000.
Scheying, Heinz, to Daimler-Benz Aktiengesellschaft. Adjusting mechanism for the rotational speed-dependent control of the injection instant of an injection pump of internal combustion engines. 4,250,859, Cl. 123-501.000.
Schiavuzzi, Roberto: *See*—
Cavallino, Francesco; Martinez, Pasquale; Schiavuzzi, Roberto; and Allione, Michele, 4,250,860, Cl. 123-587.000.
Schilling, Michel E.: *See*—
Zante, Hubert A.; Pascal, Pierre B.; Schilling, Michel E.; and Lamic, Jackie G., 4,250,705, Cl. 60-225.000.
Schlaepfer, Kenneth: *See*—
Nicolai, Richard; and Schlaepfer, Kenneth, 4,251,028, Cl. 237-8.00R.
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Sons, Mack D.; and Schlegel, William F., 4,251,005, Cl. 220-22.000.
Schleinitz, Henry M., to Du Pont de Nemours, E. I., and Company. Separation device of cordierite ceramic and α-alumina. 4,251,377, Cl. 210-510.000.
Schlick, Erich: *See*—
Schnail, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, 4,251,155, Cl. 355-15.000.
Schloemann-Siemag Aktiengesellschaft: *See*—
Berz, Gerhard, 4,250,729, Cl. 72-251.000.
Munker, Erich, 4,250,782, Cl. 83-376.000.
Schlumberger Technology Corporation: *See*—
Cailliau, Michel; and Vincent, Philippe, 4,251,773, Cl. 324-347.000.

Schmeykal, Rudolf; and Weigel, Peter, to Nixdorf Computer AG. Certificate dispenser. 4,251,010, Cl. 221-93.000.
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Felder, Louis; Kirchmayr, Rudolf; and Schmidt, Andreas, 4,251,341, Cl. 204-159.240.
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Schmidt-Reuter Ingenieurgesellschaft mbH & Co. KG: *See—*
Brockmeyer, Heinz P., 4,250,800, Cl. 98-40.00C.
Schnall, Gunther; Mullritter, Ludwig; Schlick, Erich; Blochl, Hanns; and Lischinski, Peter, to AGFA-Gevaert, A.G. Cleaning arrangement in an electrophotographic copying machine. 4,251,155, Cl. 355-15.000.
Schnall, Manfred, to Vereinigte Dentalwerke. Clamping handle for tooth root canal instruments. 4,251,214, Cl. 433-147.000.
Schneider, Horst: *See—*
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Schokens, Bernward: *See—*
Beck, Gerhard; Bartmann, Wilhelm; Lerch, Ulrich; and Schokens, Bernward, 4,251,669, Cl. 560-121.000.
Schoppa, Claus; Fortmann, Wilhelm; and Stei, Armin, to Chemische Werke Huels A.G. Moldable non-woven structured textile sheets comprising co-polymeric impregnant consisting essentially of 75-95% by weight of a thermoplastic component and 25-5% by weight of a plasticizing component. 4,251,581, Cl. 428-95.000.
Schosek, William O. Leveling means for an underground pipe installer device. 4,251,057, Cl. 254-29.00R.
Schosek, William O. Drive jaws for an underground pipe installer device. 4,251,058, Cl. 254-29.00R.
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Lueneberg, Hartmut; Maennl, Reinhard; and Grillmeier, Alfred, 4,250,687, Cl. 53-435.000.
Schreier, Ulrich: *See—*
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Schreur, Clarence. Method of making a solid crystalline composition consisting essentially of calcium ascorbate. 4,251,449, Cl. 260-343.700.
Schreurs, Willy P.: *See—*
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Schrewe, Hans: *See—*
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Schroeder, Arnold; and Nieuwenhuis, Paulus G. J., to Akzona Incorporated. Process for the preparation of (co)polymerizable composition. 4,251,640, Cl. 525-17.000.
Schroeder Brothers Corporation: *See—*
Cobb, William R.; and Barthe, Henry P., 4,250,975, Cl. 180-89.130.
Schroeder, Carl W.; and Webster, Joseph R., to Shell Oil Company. Polypropylene compositions. 4,251,407, Cl. 260-23.00R.
Schroeder, William L., to International Harvester Company. Pivot pin assembly. 4,251,182, Cl. 414-723.000.
Schubert, Thomas J.: *See—*
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Schulte, Wilfried: *See—*
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Schultz, Ronald E.: *See—*
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Schultz, William J.; and Van Bennekom, Carl F., to General Electric Company. Magnetic system for electrical current indicating meter. 4,251,771, Cl. 324-150.000.
Schumacher, Berthold W. Process for joining metals. 4,251,709, Cl. 219-121.0ED.
Schunggart, Walter: *See—*
Kammerer, Heinrich; Niess, Heinz; Schunggart, Walter; Flugge, Ruprecht; and Kilb, Hermann, 4,251,162, Cl. 400-613.100.
Schuss, Werner: *See—*
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Bonnie, G. Patrick; and Schuster, Steven C., 4,251,319, Cl. 156-656.000.
Schwab, Rolf, to Siemens Aktiengesellschaft. Device for assembling lamination stacks for electric machines. 4,250,614, Cl. 29-732.000.
Schwander, Dieter; Strell, Hermann; and Findeisen, Bernd, to Pierburg GmbH & Co. KG. Carburetor for internal combustion engines with an acceleration pump. 4,251,471, Cl. 261-34.00A.
Schwaner, Jon M., to Inland Container Corporation. Integral corrugated partition. 4,251,020, Cl. 229-15.000.
Schwartz, Albert B., to Mobil Oil Corporation. Cracking catalyst. 4,251,395, Cl. 252-455.00Z.
Schwartz, Gerhardt T.; and Prior, Allan S., to Wiggins Teape Group Limited, The. Method of and apparatus for manual writing using coded pulse train. 4,251,826, Cl. 346-163.000.
Schwartz, Ira; and Wyatt, William K., to Techniservice Division, Textured Yarn Co., Inc. Apparatus and method for making loop chenille type yarn. 4,250,701, Cl. 57-18.000.
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, to Messerschmitt-Boelkow-Blohm Gesellschaft mit beschraenkter Haftung. Four-blade rotor, especially for helicopters. 4,251,188, Cl. 416-134.00A.
Schwarz, Eckhard C. A., to Biax Fiberfilm Corporation. Product and process for stretching a tubularly formed sheet of orientable thermoplastic material. 4,251,585, Cl. 428-188.000.
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Schweikle, George E.: *See—*
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Schweitzer, Edmund O., Jr. Combined fault and voltage indicator. 4,251,770, Cl. 324-133.000.
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, to Xerox Corporation. Stripe offset geometry in injection lasers to achieve transverse mode control. 4,251,780, Cl. 331-94.50H.
SCM Corporation: *See—*
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Scott, Brian L., to Scott Instruments Company. Tactile aid to speech reception. 4,250,637, Cl. 434-114.000.
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Scott, Brian L., 4,250,637, Cl. 434-114.000.
Scott, Malcolm K.; and Rasmussen, Chris R., to McNeilab, Inc. Substituted N-iminomethylpiperidines. 4,251,655, Cl. 542-415.000.
Scott, Nicholas B.: *See—*
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Scovill Manufacturing Company: *See—*
Vago, Otto Z.; and Irlinger, Frank S., 4,250,759, Cl. 73-723.000.
Scriven, L. Edward, II; Seeto, Yee; and Manning, Carl D., to University of Minnesota, The Regents of the. Precision spinning drop interfacial tensiometer. 4,250,741, Cl. 73-64.400.
Scull, William L., to Leslie Co. Pilot mechanism for pressure regulating valve. 4,250,913, Cl. 137-488.000.
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Sederholm, Johan F.: *See—*
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Seegers, Glen A.; and Seegers, H. James, to American Stair Corporation Inc. Externally reinforced concrete stairs. 4,250,672, Cl. 52-182.000.
Seegers, H. James: *See—*
Seegers, Glen A.; and Seegers, H. James, 4,250,672, Cl. 52-182.000.
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Sekisui Kagaku Kogyo K.K.: *See—*
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Self, Kenneth R.: *See—*
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Senften, John W., to Harvey Hubbell, Incorporated. Section insulator for catenary systems. 4,250,982, Cl. 191-39.000.
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Shaffer, Robert G., to Fischer & Porter Company. Frequency-to-binary converter. 4,251,869, Cl. 364-484.000.

Shakespeare Company: *See*—
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Sheasby, Peter G.; Short, Edward P.; and Gupta, Tarun K. S., to Alcan Research and Development Limited. Electrolytic coloring of anodized aluminium by means of optical interference effects. 4,251,330, Cl. 204-35.00N.
Shell Oil Company: *See*—
Carswell, William D.; Youd, Arthur; and MacPhail, Alexander C. B., 4,251,431, Cl. 252-40.700.
Nanne, Johannes M.; Post, Martin F. M.; and Stork, Willem H. J., 4,251,499, Cl. 423-329.000.
Schroeder, Carl W.; and Webster, Joseph R., 4,251,407, Cl. 260-23.00R.
Shelly, Randolph D. W., to Sperry Corporation. Loss compensation regulation for an inverter power supply. 4,251,857, Cl. 363-26.000.
Shepard, Joseph F.: *See*—
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Sherex Chemical Company, Inc.: *See*—
Sigan, Jack W.; and Fuller, James G., 4,251,385, Cl. 252-182.000.
Sheridan, Joseph U. Abrasion resistant bend and method for small pipelines. 4,251,170, Cl. 406-197.000.
Shibasaki, Ichiro; Ohmura, Kaoru; and Kimura, Takeo, to Asahi Kasei Kogyo Kabushiki Kaisha. Semiconductor magnetoresistive element having a differential effect. 4,251,795, Cl. 338-32.00R.
Shibata, Norio: *See*—
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,251,695, Cl. 369-136.000.
Shibata, Shoson; Sato, Akio; Hayakawa, Yoshihiro; and Bamba, Fumio, to Bridgestone Tire Company Limited. Super rigid rubber composition and a tire using the same. 4,250,939, Cl. 152-362.00R.
Shibata, Yoji: *See*—
Kakihara, Hideto; Hiratsuka, Kenichi; Shibata, Yoji; and Kosuge, Wataru, 4,251,691, Cl. 179-2.0TV.
Shibuya Kogyo Co. Ltd.: *See*—
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Shimizu, Munetaka; and Harada, Hiroyuki, to Copal Company Limited. Cutter blade receiving member in a printer. 4,250,780, Cl. 83-176.000.
Shimizu, Taketo: *See*—
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Shimose, Takuma; and Tanaka, Masato, to Shimose Shokuhin Co., Ltd. Enclosed system for a batch process for the manufacture of fish meat. 4,251,557, Cl. 426-417.000.
Shinoda, Yoshio: *See*—
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Shinozaki, Nobuo: *See*—
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Shirato, Yoshiaki: *See*—
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Shoemaker, Robert S., to Bechtel International Corporation. Inclined separation screen for agitation tank. 4,251,352, Cl. 209-45.000.
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Shubb, Richard; and Coontz, David. Capo. 4,250,790, Cl. 84-318.000.
Shyu, Bor L. Hydraulic suspension system for car. 4,251,088, Cl. 280-112.00A.
Sickinger, James D.: *See*—
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Siddi, Giorgio: *See*—
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Siegel, Howell T.; Siegel, Jeffrey I.; and Shank, Richard E., to Butler Ventamatic Corp. Attic ventilation control system. 4,251,026, Cl. 236-49.000.
Siegel, Israel. Disposable non-cyclic sorption temperature-changers. 4,250,720, Cl. 62-480.000.
Siegel, Jeffrey I.: *See*—
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Siegel, Milton I., to AMBA Marketing Systems, Inc. Handbag. 4,250,938, Cl. 150-35.000.
Siemens Aktiengesellschaft: *See*—
Aulich, Hubert; and Eisenrith, Karl-Hein, 4,251,250, Cl. 65-2.000.
Diessner, Armin, 4,251,681, Cl. 174-28.000.
Kalbitz, Wolfgang; Keyl, Erwin; Satzinger, Walter; and Wichert, Hans, 4,251,850, Cl. 361-331.000.
Lucas, Ilse, 4,251,790, Cl. 335-213.000.
Mayer, Wolfgang, 4,251,866, Cl. 364-200.000.
Pfeifer, Rolf, 4,251,729, Cl. 250-402.000.
Pfleiderer, Hans-Joerg, 4,251,785, Cl. 333-165.000.
Schwab, Rolf, 4,250,614, Cl. 29-732.000.
Utner, Ferdinand; Vetter, Harald; and Vilsmeier, Gerhart, 4,250,604, Cl. 29-25.420.
Worschischek, Rainer; and Schuss, Werner, 4,251,212, Cl. 433-126.000.
Sievers, Robert E.; and Wenzel, Thomas J., to University Patents, Inc. Liquid hydrocarbon-soluble rare earth chelates prepared from the novel ligand 2,2,7-trimethyl-3,5-octanedione and fuels containing same. 4,251,233, Cl. 44-68.000.
Sigan, Jack W.; and Fuller, James G., to Sherex Chemical Company, Inc. Diol compositions. 4,251,385, Cl. 252-182.000.
Sigg, Conrad, to Carl Schenck AG. System utilizing a vibratory combustion bed to incinerate waste material, or fuel. 4,250,818, Cl. 110-278.000.
Sigg, Horst: *See*—
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Signorini, Ernesto: *See*—
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Sih, John C., to Upjohn Company, The. 2-Decarboxy-2-aminomethyl-19-hydroxy-6-oxo-PGE_1 compounds. 4,251,464, Cl. 564-453.000.
Silberberg, Joseph; and Weil, Edward D., to Stauffer Chemical Company. Inorganic filler material and polymer composition containing the same. 4,251,436, Cl. 260-42.140.
Sim, James W.; and Kinoshita, Kimio, to United States of America, Energy. Method of preparing a sintered lithium aluminate structure for containing electrolyte. 4,251,600, Cl. 429-12.000.
Simms, John A., to Du Pont de Nemours, E. I., and Company. Acrylic graft copolymers and coating compositions thereof. 4,251,404, Cl. 260-15.000.
Simon, Shulamith, to Research Products Rehovot Ltd. Cross-linked enzyme membrane. 4,251,631, Cl. 435-106.000.
Simon, Timothy M.; and Kunishima, Dennis H. Adapter for laboratory filter. 4,251,366, Cl. 210-767.000.
Simone, Andre A.; Ogren, Dennis F.; Adams, William R.; and Kohn, Harold B., to Lummus Company, The. Gravity settling. 4,251,378, Cl. 210-522.000.
Singbartl, Gunther: *See*—
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Site-Tac, Inc.: *See*—
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Sites, George A., to Halmar Electronics, Inc. Annunciator of modular construction. 4,251,853, Cl. 361-394.000.
Sizer, Phillip S.; and Council, Malcolm N., to Otis Engineering Corporation. Well tubing handling apparatus. 4,251,176, Cl. 414-22.000.
Skaggs, Michael G. Tractor-trailer vehicle decoupling tool. 4,251,089, Cl. 280-433.000.
Skoog, Knut A. Piston rod seal. 4,251,081, Cl. 277-3.000.
Skrobek, Alois: *See*—
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Skuran, Victor, to Transco, Inc. Mounting for insulated panel. 4,250,678, Cl. 52-478.000.
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Slavens, Clyde M.; and Clavin, Edward A., to Midcon Pipeline Equipment Co. Track apparatus. 4,250,813, Cl. 104-118.000.
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Slinkard, William E.: *See*—
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Sloan, Lowell T.: *See*—
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Smallbone, Robert A., to Britax (Wingard) Limited. Method of making heated mirrors. 4,251,316, Cl. 156-634.000.
Smiley, David L.: *See*—
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Smith, Bobby L.: *See*—
Hartlaub, Jerome T.; Smith, Bobby L.; and Powell, Richard M., 4,250,884, Cl. 128-419.0PT.
Smith, David T.; and Biehl, Harold R. Method of forming valve lifters. 4,251,273, Cl. 75-200.000.
Smith, Gordon E., to Quest Medical, Inc. Catheter insertion device. 4,250,881, Cl. 128-214.400.
Smith, John H., to Conoco, Inc. Method for calcining delayed coke. 4,251,323, Cl. 201-29.000.
Smith, Karl. Portable corral. 4,250,836, Cl. 119-20.000.
Smith, Michael: *See*—
Dardik, Herbert; Smith, Michael; Ibrahim, Ibrahim M.; and Dardik, Irving I., 4,250,887, Cl. 128-655.000.
Smith, Randall E. Air filter and method of filtering. 4,251,237, Cl. 55-96.000.

Smith, Richard D.; and Uthe, P. Michael. Microwave fabric dryer method and apparatus. 4,250,628, Cl. 34-1.000.
Smith, Richard W., to Motor Wheel Corporation. Manufacture of ornamental vehicle wheels. 4,251,476, Cl. 264-46.700.
Smith, Robert M.: *See—*
Baugh, Charles R.; and Smith, Robert M., 4,251,880, Cl. 370-80.000.
Smith, Robert P. Face mask for use with goggles. 4,250,577, Cl. 2-427.000.
Smith, Vernon J., to Dow Chemical Company, The. Crate assembly and materials therefor. 4,251,006, Cl. 220-22.000.
Smith, William S., Jr., to Exxon Research & Engineering Co. Thermoplastic blend of polypropylene, EPM and propylene-ethylene copolymer. 4,251,646, Cl. 525-88.000.
SmithKline Corporation: *See—*
Lam, Bing L.; Mendelson, Wilford L.; and Spainhour, Charles B., Jr., 4,251,660, Cl. 546-150.000.
Weinstock, Joseph, 4,251,525, Cl. 424-244.000.
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Societe Anonyme des Etablissements Staubli: *See—*
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Societe Anonyme dite: Stein Industrie: *See—*
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Societe Anonyme Parinter: *See—*
Berend, Francis T., 4,251,574, Cl. 427-282.000.
Societe Chimique de la Grande Paroisse, Azote et Produits Chimiques: *See—*
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Societe d'Assistance Technique pour Produits Nestle S.A.: *See—*
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Societe Electrique Sterling: *See—*
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Societe Luchaire: *See—*
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Societe Nationale des Poudres et Explosifs: *See—*
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Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
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Societe Nationale Elf Aquitaine (Production): *See—*
Nobileau, Philippe C.; Dermy, Rene M.; and Fleury, Guy J., 4,251,167, Cl. 405-170.000.
Sodastream Limited: *See—*
Gilbey, Guy, 4,251,473, Cl. 261-51.000.
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, to Yamamoto Electric Industrial Co., Ltd. Slide-type potentiometer. 4,251,796, Cl. 338-176.000.
Sohda, Senju. Method and apparatus for decomposing injurious substances. 4,251,486, Cl. 422-170.000.
Sokolich, William G. Closed sound delivery system. 4,251,686, Cl. 179-1.00N.
Sollish, Bruce D.: *See—*
Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, 4,250,894, Cl. 128-774.000.
Soltis, Frank G.: *See—*
Mitchell, Glen R.; Soltis, Frank G.; and Hoffman, Roy L., 4,251,860, Cl. 364-200.000.
Son, Pyong-Nae; and Lai, John T., to B. F. Goodrich Company, The. High molecular weight piperidine derivatives as UV stabilizers. 4,251,435, Cl. 260-45.8NE.
Sons, Mack D.; and Schlegel, William F., to Magnum Industries, Inc. Tank. 4,251,005, Cl. 220-22.000.
Sony Corporation: *See—*
Isono, Katsuo, 4,251,832, Cl. 358-67.000.
Iwasaki, Shunichi; and Nakamura, Yoshihisa, 4,251,842, Cl. 360-134.000.
Okada, Hisao; Mogi, Takao; and Murakami, Shigetoshi, 4,251,812, Cl. 340-696.000.
Saito, Etsuro, 4,251,838, Cl. 360-77.000.
Tatami, Mitsushige, 4,251,830, Cl. 358-8.000.
Sorensen, Frode: *See—*
Pedersen, Hans-Kristian; Sorensen, Frode; and Hyldal, Jorgen, 4,251,758, Cl. 318-254.000.
Sorenson, Walter E. Boring head. 4,250,777, Cl. 82-2.00E.
Souillard, Michel, to Enertec. Method and apparatus for determining the direction of a fault on a power transmission line. 4,251,766, Cl. 324-52.000.
Souza, Anthony J.; and Askins, William E., to Woodstream Corporation. Rotating frame animal trap. 4,250,654, Cl. 43-90.000.
Souzu, Isao: *See—*
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.
Spaccapaniccia, Domenico. Support for drying hair. 4,250,903, Cl. 132-9.000.
Spainhour, Charles B., Jr.: *See—*
Lam, Bing L.; Mendelson, Wilford L.; and Spainhour, Charles B., Jr., 4,251,660, Cl. 546-150.000.
Spasojevic, Ratko. Cooling and cooking apparatus. 4,250,959, Cl. 165-61.000.
Spector, George: *See—*
Campbell, Robert A.; and Spector, George, 4,250,900, Cl. 131-189.000.
Harrington, Duane E.; and Spector, George, 4,250,649, Cl. 43-16.000.
Lageer, Reginald; and Spector, George, 4,251,085, Cl. 280-10.000.
Spedding, Ian M., to Hawkhead Bray & Son Limited. Press action machines. 4,250,735, Cl. 72-455.000.
Speece, Richard E. Low energy gas transfer system. 4,251,365, Cl. 261-121.00R.
Speer, Richard. Ball projecting device capable of providing spin. 4,250,862, Cl. 124-56.000.
Speidel, Volker; Bergmann, Eduard; and Worlitz, Lothar, to Leopold Kostal, Firma. Opto-electronical switching device, specially for motor vehicles. 4,251,723, Cl. 250-229.000.
Spencer, Bruce J.: *See—*
Plowman, Richard E.; and Spencer, Bruce J., 4,251,211, Cl. 433-98.000.
Sperry Corporation: *See—*
Marver, James M.; and Olson, Wayne R., 4,251,875, Cl. 364-754.000.
Rothenberger, Roland D., 4,251,863, Cl. 364-200.000.
Shelly, Randolph D. W., 4,251,857, Cl. 363-26.000.
Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., 4,250,896, Cl. 130-27.00T.
Spies, Alfons, to Johannes Heidenhain GmbH. Gas bearing for rapidly rotating parts. 4,251,119, Cl. 308-9.000.
Spitzner, Ernest B., to Henkel Corporation. Sulfonamidothiadiazoles, metal complexes thereof, and solutions containing such compounds for use in extraction of metal values. 4,251,664, Cl. 548-138.000.
Sprenger, Martin: *See—*
Barthruff, Otto; Mayer, Martin; and Sprenger, Martin, 4,251,788, Cl. 335-157.000.
Square D Company: *See—*
Diersing, Raymond A.; Hackenbroch, Wilhelm T.; Schweikle, George E.; and Stanback, Harris I., 4,251,851, Cl. 361-363.000.
Stamicarbon, B.V.: *See—*
Biermans, Andreas J., 4,251,235, Cl. 55-70.000.
Stanback, Harris I.: *See—*
Diersing, Raymond A.; Hackenbroch, Wilhelm T.; Schweikle, George E.; and Stanback, Harris I., 4,251,851, Cl. 361-363.000.
Standard Telephones and Cables Limited: *See—*
Rees, Frederick H.; and Bleicher, Dan, 4,251,684, Cl. 178-3.000.
Stanley Electric Co., Ltd.: *See—*
Ariga, Kazuo; Oinuma, Norimasa; Akanuma, Youichiro; and Yoshida, Mitunari, 4,250,645, Cl. 40-545.000.
Stanwell, Peter: *See—*
Martin, Barrie J.; Harvey, Dennis; and Stanwell, Peter, 4,251,031, Cl. 239-102.000.
Stark, Marvin; Suvada, Steve L.; and Aquino, Herman A., to Pullman Incorporated. Dual hopper car doors. 4,250,814, Cl. 105-251.000.
Stauffer Chemical Company: *See—*
Gutman, Arnold D., 4,251,263, Cl. 71-94.000.
Magee, Walter L.; and Bayer, Arthur C., 4,251,451, Cl. 260-413.000.
Silberberg, Joseph; and Weil, Edward D., 4,251,436, Cl. 260-42.140.
Stei, Armin: *See—*
Schoppa, Claus; Fortmann, Wilhelm; and Stei, Armin, 4,251,581, Cl. 428-95.000.
Stein, Volkhard: *See—*
Wessel, Wolf; Stumpp, Gerhard; and Stein, Volkhard, 4,250,848, Cl. 123-452.000.
Steinberg, Meyer: *See—*
Johnson, Richard; and Steinberg, Meyer, 4,251,340, Cl. 204-159.110.
Steiner, Janos: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,250,774, Cl. 432-15.000.
Steiner, Rudolf; and Herbrechtsmeier, Peter, to Hoechst Aktiengesellschaft. Process for carrying out gas/liquid reactions. 4,251,505, Cl. 423-659.000.
Steinman, Donald K.: *See—*
Vagelatos, Nicholas; Steinman, Donald K.; John, Joseph; and Young, Jack C., 4,251,724, Cl. 250-264.000.
Stemme, Otto; and Wagensonner, Eduard, to AGFA-Gevaert, A.G. Shutter-diaphragm system with light-totalizing circuit. 4,251,141, Cl. 354-23.00D.
Stemme, Otto; Cocron, Istvan; and Lermann, Peter, to AGFA-Gevaert, A.G. Photographic camera with means indicating the state of focus. 4,251,143, Cl. 354-25.000.
Stemme, Otto; Engelsmann, Dieter; and Nicko, Reinhard, to AGFA-Gevaert, A.G. Photographic camera. 4,251,148, Cl. 354-173.000.
Stenehjem, Jerome C.: *See—*
Jacobsen, Stephen C.; Stenehjem, Jerome C.; Stephen, Robert L.; and Luntz, Richard D., 4,250,878, Cl. 128-207.210.
Stengelin, Volker. Device for biological digestion of sewage. 4,251,370, Cl. 210-150.000.

Stephan, Michael: *See*—
Schwarz, Alois; Mautz, Karlheinz; and Stephan, Michael, 4,251,188, Cl. 416-134.00A.

Stephen, Robert L.: *See*—
Jacobsen, Stephen C.; Stenehjem, Jerome C.; Stephen, Robert L.; and Luntz, Richard D., 4,250,878, Cl. 128-207.210.

Stephens, Frank H., Jr., to Brunswick Corporation. Vapor detector for marine propulsion apparatus. 4,250,829, Cl. 440-1.000.

Sterling Drug Inc.: *See*—
Crounse, Nathan N.; and Schmidt, Paul J., 4,251,446, Cl. 260-326.340.
Schmidt, Paul J.; and Hung, William M., 4,251,092, Cl. 282-27.500.

Stichting Bouwcentrum: *See*—
van Heel, Joannes M., 4,250,885, Cl. 126-430.000.

Stiles, James A. R.: *See*—
Haering, Rudolph R.; Stiles, James A. R.; and Brandt, Klaus, 4,251,606, Cl. 429-194.000.

Stiles, John L.: *See*—
Minnis, Gary R.; and Stiles, John L., 4,251,193, Cl. 417-300.000.

Stirbis, James S.: *See*—
McMillin, Danny L.; and Stirbis, James S., 4,250,831, Cl. 118-669.000.

Stitzer, Steven N.: *See*—
Goldie, Harry; and Stitzer, Steven N., 4,251,786, Cl. 333-17.00L.

Stock, Don J. R.: *See*—
Sartorius, Wilfried; and Stock, Don J. R., 4,251,777, Cl. 328-155.000.

Stock, Malcolm G., to Rolls-Royce Motors Limited. Bumper and fixings. 4,251,096, Cl. 293-150.000.

Stokes, Paul D.: *See*—
Martinec, Richard C.; Berry, James I.; and Stokes, Paul D., 4,250,750, Cl. 73-308.000.

Stolz, James B., to Synergetics, Inc. Solid state electronic ballast system for fluorescent lamps. 4,251,752, Cl. 315-206.000.

Stone, Cyril O. Refrigeration apparatus. 4,250,717, Cl. 62-279.000.

Stone, Douglas C. Solar reflector. 4,251,135, Cl. 350-288.000.

Stone, Herman, to Tenneco Chemicals, Inc. Production of polyurethane foam of reduced tendency to form embers when burned. 4,251,635, Cl. 521-113.000.

Storage Technology Corporation: *See*—
Ruether, Peter G.; and Vachon, Patrick A., 4,251,881, Cl. 370-98.000.

Stork, Willem H. J.: *See*—
Nanne, Johannes M.; Post, Martin F. M.; and Stork, Willem H. J., 4,251,499, Cl. 423-329.000.

Storm, Ole: *See*—
Neuhaeusser, Horst; and Storm, Ole, 4,251,177, Cl. 414-276.000.

Stouffer, Ronald D., to Bowles Fluidics Corporation. Sweeping air stream apparatus and method. 4,250,799, Cl. 98-2.080.

Stratton, Claud L.; and Kane, James F., to Reynolds Metals Company. Clay preparation. 4,251,265, Cl. 75-3.000.

Straub, Harold E.: *See*—
Dehart, Marv L.; Kloostra, M. Leon; and Straub, Harold E., 4,251,027, Cl. 236-49.000.

Streater, Richard W.: *See*—
Miner, Carla J.; Baraff, David R.; Serinken, Nur M.; Streater, Richard W.; and Drobny, Vladimir F., 4,251,136, Cl. 350-334.000.

Streich, Steven G.; and Knox, Lloyd C., to Halliburton Company. Insertion type cementing baffle. 4,250,966, Cl. 166-328.000.

Streifer, William: *See*—
Scifres, Donald R.; Burnham, Robert D.; and Streifer, William, 4,251,780, Cl. 331-94.50H.

Strell, Hermann: *See*—
Schwander, Dieter; Strell, Hermann; and Findeisen, Bernd, 4,251,471, Cl. 261-34.00A.

Stroh, Walter: *See*—
Will, Gerhard; and Stroh, Walter, 4,250,922, Cl. 137-625.650.

Struckman, Edmund E.; and Larsen, Harold S. Float valve assembly. 4,250,907, Cl. 137-1.000.

Strunk, Manfred: *See*—
Deigmuller, Gunter; Munk, Andreas; Rohe, Bruno; and Strunk, Manfred, 4,250.792, Cl. 86-1.00R.

Stumpp, Gerhard: *See*—
Wessel, Wolf; Stumpp, Gerhard; and Stein, Volkhard, 4,250,848, Cl. 123-452.000.

Sturans, Maris A.: *See*—
Pfeiffer, Hans C.; and Sturans, Maris A., 4,251,728, Cl. 250-396.00R.

Sturm, Harald: *See*—
Deimel, Gerhard; Schmidt, Paul; and Sturm, Harald, 4,251,303, Cl. 156-73.100.

Stutz, Herbert: *See*—
Jarre, Wolfgang; Stutz, Herbert; and Schoen, Ernst, 4,251,639, Cl. 521-159.000.

Suami, Tetsuo. Novel nitrosourea derivatives. 4,251,515, Cl. 424-180.000.

Subco, Inc.: *See*—
Gersch, Richard C., 4,251,760, Cl. 318-604.000.

Sublistatic Holding SA: *See*—
Hendriks, Dieter, 4,251,616, Cl. 430-107.000.
Mehl, Wolfgang; Hendriks, Dieter; and Decombe, Robert, 4,251,611, Cl. 430-42.000.

Sudo, Michio. Stretching apparatus of a flattened cylindrical film. 4,251,197, Cl. 425-393.000.

Sugatsune Industrial Co., Ltd.: *See*—
Sato, Reiji, 4,251,107, Cl. 297-19.000.

Sugier, Andre: *See*—
Deschamps, Andre; Franckowiak, Sigismond; and Sugier, Andre, 4,251,495, Cl. 423-230.000.

Sugimori, Shiro; Goto, Tetsuro; and Maruyama, Sumiko, to Nippon Kogaku K.K. Electronic flash with calculator. 4,251,147, Cl. 354-127.000.

Suhara, Manabu; and Arai, Kiyotaka, to Asahi Glass Company, Ltd. Electrolysis of aqueous solution of alkali metal chloride. 4,251,333, Cl. 204-98.000.

Suladze, Otar N.: *See*—
Goldberg, Ilya A.; Kobtsev, Boris A.; Polonsky, Jury A.; Velikin, Boris A.; Mindeli, Mamuka S.; Kashakashvili, Guram V.; Popiashvili, Shalva V.; and Suladze, Otar N., 4,251,063, Cl. 266-281.000.

Sulzer Brothers Limited: *See*—
Zeleny, Klaus P., 4,250,931, Cl. 139-341.000.

Sumachev, Jury N. Tone arm. 4,251,080, Cl. 369-248.000.

Sumitomo Chemical Company, Limited: *See*—
Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shinichi; and Tohoma, Wataru, 4,251,651, Cl. 526-204.000.
Kitamura, Shuji; Watanabe, Masashi; and Nakayama, Michihiro, 4,250,660, Cl. 47-57.600.

Sun, Kin C., to Kin Hip Metal & Plastic Factory Ltd. Containers. 4,251,004, Cl. 220-4.00R.

Sunada, Yoichi: *See*—
Takahashi, Yoshikazu; Sunada, Yoichi; and Takitani, Masaru, 4,251,388, Cl. 252-429.00B.

Sundpacma Aktiebolag: *See*—
Andersson, Nils E., 4,250,693, Cl. 53-543.000.

Sundstrand Data Control, Inc.: *See*—
Hanson, Richard A., 4,250,757, Cl. 73-517.00B.

Sundt, Erling; Aschiero, Roland; and Schenk, Walter, to Firmenich SA. Cyclohexyl-pentanolides and their use in perfume. 4,251,398, Cl. 252-522.00R.

Suto, Masaru: *See*—
Fujita, Takeyuki; Suto, Masaru; and Ogura, Kazumoto, 4,251,460, Cl. 564-132.000.

Sutter, Leroy V., Jr., to Hughes Aircraft Company. Electric discharge-excited flowing gas laser with discharge confinement shield. 4,251,781, Cl. 331-94.5PE.

Sutton, Robert W., to Bendix Corporation, The. Electronic injection carburetor. 4,250,842, Cl. 123-472.000.

Suunto Oy: *See*—
Jarvenpaa, Kauko; Leinonen, Pertti; and Raisanen, Jouko, 4,250,627, Cl. 33-364.000.

Suvada, Steve L.: *See*—
Stark, Marvin; Suvada, Steve L.; and Aquino, Herman A., 4,250,814, Cl. 105-251.000.

Suzki, Akiyoshi; and Kano, Ichiro, to Canon Kabushiki Kaisha. Photoelectric detecting device. 4,251,129, Cl. 350-91.000.

Suzuka, Takashi: *See*—
Kaneko, Yoshikazu; Suzuka, Takashi; and Okuno, Tadahide, 4,251,854, Cl. 362-5.000.

Suzuki, Kazuo: *See*—
Miyao, Nobuyoshi; Matsui, Hirotoshi; Isoyama, Nobukazu; Nonaka, Susumu; Makino, Masayasu; Suzuki, Kazuo; and Koda, Hirokazu, 4,250,821, Cl. 112-158.00B.

Suzuki, Kozo: *See*—
Takahashi, Kunihisa; and Suzuki, Kozo, 4,251,690, Cl. 179-1.0GM.

Suzuki, Noritoshi; Tsubokawa, Masakatsu; Bathum, Roy N., Jr.; and Selset, Ron S., to Kabushiki Kaisha Kito; and Beebe Brothers, Inc. Hand hoist. 4,251,060, Cl. 254-356.000.

Suzuki, Shigehisa: *See*—
Yamamoto, Hiroshi; Suzuki, Shigehisa; and Tabata, Osamu, 4,251,839, Cl. 360-103.000.

Suzuki, Toshiyuki; Matsumura, Kuniaki; Maeda, Hiroshi; Imai, Akira; and Kurokawa, Nobuo, to Morishita Jinta Company, Limited. Apparatus for making miniature capsules. 4,251,195, Cl. 425-6.000.

Svenska Traforskningsinstitutet: *See*—
Helgesson, Anders T.; Magnusson, Gunnar B.; and Sederholm, Johan F., 4,250,935, Cl. 144-2.0AA.

Svet, Frank A., to General Signal Corporation. Multiplexing means for motion detectors at grade crossings. 4,251,041, Cl. 246-128.000.

Swales, Barton L.: *See*—
Salley, Gordon L.; and Swales, Barton L., 4,251,014, Cl. 222-615.000.

Swan, Walter B. Lid for polygonal container. 4,251,021, Cl. 229-43.000.

Swanson, Richard H., to White Consolidated Industries, Inc. Cantilevered shelf and supporting means. 4,250,815, Cl. 108-108.000.

Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, to Symbol Technologies. Portable laser scanning arrangement for and method of evaluating and validating bar code symbols. 4,251,798, Cl. 340-146.3SY.

Swarztrauber, Sayre A.: *See*—
Segan, Marc H.; and Swarztrauber, Sayre A., 4,250,787, Cl. 84-1.010.

Swenson, Richard C., to United States of America, Navy. Flexible linear thermal array. 4,251,794, Cl. 338-26.000.

Swift, Harold E.; Innes, Robert A.; and Adams, Phillip, to Gulf Research & Development Company; and Kewanee Industries. Process for preparing alkyldimethylamines. 4,251,465, Cl. 564-479.000.

Swift, Harold E.: *See*—
Madgavkar, Ajay M.; Vogel, Roger F.; and Swift, Harold E., 4,250,962, Cl. 166-256.000.

Swindells, Richard; and Cowley, Gerald, to ERCO Industries Limited. Efficiency control system for chlorine dioxide plants. 4,251,503, Cl. 423-478.000.
Swindells, Richard: *See—*
Cowley, Gerald; and Swindells, Richard, 4,251,224, Cl. 23-230.00A.
Swiss Aluminium Ltd.: *See—*
Buxmann, Kurt; Bolliger, Martin; and Gyongyos, Ivan, 4,250,950, Cl. 164-430.000.
SWS Silicones Corporation: *See—*
Martin, Eugene R., 4,251,277, Cl. 106-38.220.
Sycəm Advanced Technology Corp.: *See—*
Camilleri, Thomas M., 4,251,064, Cl. 267-136.000.
Symbol Technologies: *See—*
Swartz, Jerome; Harrison, Shelley A.; Barkan, Edward; Delfine, Frank; and Brown, George, 4,251,798, Cl. 340-146.3SY.
Synergetics, Inc.: *See—*
Stolz, James B., 4,251,752, Cl. 315-206.000.
Szente, Andre: *See—*
Fischli, Albert E.; and Szente, Andre, 4,251,443, Cl. 260-239.30D.
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, to Richter Gedeon Vegyeszeti Gyar Rt. 3-(1-Pyrazolyl)-pyridazine derivatives. 4,251,658, Cl. 544-238.000.
Tabata, Osamu: *See—*
Yamamoto, Hiroshi; Suzuki, Shigehisa; and Tabata, Osamu, 4,251,839, Cl. 360-103.000.
Tabuchi, Takahisa: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; and Takehata, Tetsuro, 4,251,202, Cl. 425-461.000.
Tadanier, John S.: *See—*
Martin, Jerry R.; Tadanier, John S.; and Johnson, Paulette, 4,251,516, Cl. 424-180.000.
Tagami, Mutsukazu: *See—*
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,251,791, Cl. 335-302.000.
Tagiev, Ruslan D.: *See—*
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.
Taguchi, Tadashi: *See—*
Kodera, Yoshiaki; Watanabe, Kiyoyuki; Kadoya, Tetsuo; and Taguchi, Tadashi, 4,250,661, Cl. 47-58.000.
Tairadate, Katsutoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Key mechanism for musical wind instruments. 4,250,791, Cl. 84-385.00R.
Taisho Pharmaceutical Co., Ltd.: *See—*
Amano, Takehiro; Sawada, Jiro; and Sasajima, Michitada, 4,251,543, Cl. 424-317.000.
Takahashi, Kunihisa; and Suzuki, Kozo, to Toko, Inc. Frequency-modulation stereophonic receiver. 4,251,690, Cl. 179-1.0GM.
Takahashi, Yoshikazu; Sunada, Yoichi; and Takitani, Masaru, to Toyo Stauffer Chemical Co., Ltd. Titanium trichloride catalytic component and method for homo- or co-polymerization of α-olefin. 4,251,388, Cl. 252-429.00B.
Takamatsu, Tetsuya: *See—*
Morita, Minoru; and Takamatsu, Tetsuya, 4,251,500, Cl. 423-449.000.
Takasaka, Masayuki: *See—*
Yamato, Yoshihiro; Okada, Hideo; Takasaka, Masayuki; and Urabe, Masanori, 4,250,798, Cl. 493-306.000.
Takase, Sadao, to Nissan Motor Company, Limited. Apparatus for controlling the starting function of an internal combustion engine. 4,250,849, Cl. 123-179.00G.
Takasugi, Masashi: *See—*
Asano, Hidejiro; Oka, Joji; Saito, Katushi; and Takasugi, Masashi, 4,251,329, Cl. 204-27.000.
Takatori, Yasushi: *See—*
Hara, Toshitami; Sato, Yasushi; Takatori, Yasushi; and Shirato, Yoshiaki, 4,251,824, Cl. 346-140.00R.
Takeda Chemical Industries, Ltd.: *See—*
Ochiai, Michihiko; Morimoto, Akira; and Miyawaki, Toshio, 4,251,657, Cl. 544-027.000.
Takedoi, Atushi; Horiishi, Nanao; Matsui, Goro; and Toda, Koji, to Toda Kogyo Corp. Stabilization treatment of acicular ferromagnetic iron or iron-alloy particles against the oxidation thereof. 4,251,592, Cl. 428-403.000.
Takehata, Tetsuro: *See—*
Asari, Akira; Noyori, Tatsuhiko; Tabuchi, Takahisa; and Takehata, Tetsuro, 4,251,202, Cl. 425-461.000.
Takemoto, Takeo: *See—*
Kawamura, Takao; Izumida, Yukihiro; Fukushima, Hiroshi; Takemoto, Takeo; Nakazawa, Masaru; and Kumazawa, Tetsuo, 4,251,746, Cl. 313-345.000.
Takemura, Toru: *See—*
Mimura, Koji; Takemura, Toru; and Fujinaga, Yoshikazu, 4,251,587, Cl. 428-233.000.
Takiguchi, Kazuo: *See—*
Ohara, Osamu; and Takiguchi, Kazuo, 4,251,425, Cl. 260-37.0PC.
Takimoto, Yasuyuki: *See—*
Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, 4,251,622, Cl. 430-332.000.
Takitani, Masaru: *See—*
Takahashi, Yoshikazu; Sunada, Yoichi; and Takitani, Masaru, 4,251,388, Cl. 252-429.00B.
Tamari, Yehuda. Blood pulsating and/or pumping device. 4,250,872, Cl. 128-1.00D.
Tan, King-Han; and de Greef, Jan L., to Borg-Warner Corporation. Compatible polyurethane blends. 4,251,642, Cl. 525-66.000.
Tanabe, Kunsei: *See—*
Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, 4,251,622, Cl. 430-332.000.
Tanahashi, Toshio; and Fujioka, Yasuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust double pipe of an internal combustion engine. 4,250,708, Cl. 60-322.000.
Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, to Toray Industries, Inc. Polyetherester block copolymer and process for producing the same. 4,251,652, Cl. 528-279.000.
Tanaka, Masato: *See—*
Shimose, Takuma; and Tanaka, Masato, 4,251,557, Cl. 426-417.000.
Tanaka, Seiji: *See—*
Nakajima, Tomoo; Yamaoka, Shigeyuki; and Tanaka, Seiji, 4,251,103, Cl. 296-195.000.
Tanaka, Yoshihiro: *See—*
Matsuda, Motonobu; Matsui, Tohru; Nanba, Yasuhiro; and Tanaka, Yoshihiro, 4,251,144, Cl. 354-25.000.
Tanigaki, Takashi; Koshio, Takeshi; and Otawa, Motohiro, to Nippon Steel Corporation. Low-hydrogen coated electrode. 4,251,711, Cl. 219-146.240.
Tanigami, Takahiko: *See—*
Kimura, Katsuhiro; Endo, Akira; Sekine, Kenji; Tanigami, Takahiko; and Kaneko, Yoichi, 4,251,817, Cl. 343-5.0DD.
Tankersley, Donald L., to Cutter Laboratories, Inc. Intravenously injectable solution of plasma protein fraction free from bradykinin, kininogen and prekallikrein activators and processes for its production. 4,251,510, Cl. 424-101.000.
Taplin, Lael B., to Bendix Corporation, The. Fuel injector for producing shaped injection pulses. 4,250,857, Cl. 123-448.000.
Tardos, Laszlo: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Tarnacki, Edward J. Exercising device for skiers. 4,251,068, Cl. 272-97.000.
Tarrant, Kent. Memorandum pad-calendar. 4,250,639, Cl. 40-107.000.
Tatami, Mitsushige, to Sony Corporation. System for removing vertical vibrations from reproduced video. 4,251,830, Cl. 358-8.000.
Taubner, Fred R.: *See—*
Gallien, John P.; Mackey, Francis P.; Sadoski, Tadius T.; and Taubner, Fred R., 4,251,750, Cl. 313-487.000.
Tavel, Donald L. Music synthesizer. 4,250,789, Cl. 84-1.220.
Taylor, Frank, to Taylor, Frank. Diabetic travel kit. 4,250,998, Cl. 206-570.000.
Taylor, Raymond G., to Western Electric Company, Inc. Tone-ringing circuits and r ethods for telephone sets. 4,251,694, Cl. 179-84.00T.
TDK Electronics, Co. Ltd.: *See—*
Hamabata, Toshihiro; and Umeki, Shinji, 4,251,504, Cl. 423-632.000.
Techniservice Division, Textured Yarn Co., Inc.: *See—*
Schwartz, Ira; and Wyatt, William K., 4,250,701, Cl. 57-18.000.
Technology Glass Corporation: *See—*
Dumesnil, Maurice E.; and Schreier, Ulrich, 4,251,595, Cl. 428-426.000.
Teeter, Roger C.: *See—*
Theriault, Maurice N.; Teeter, Roger C.; and Wirz, Francois, 4,250,585, Cl. 9-310.00A.
Teijin Chemicals, Ltd.: *See—*
Ohara, Osamu; and Takiguchi, Kazuo, 4,251,425, Cl. 260-37.0PC.
Teijin Limited: *See—*
Hara, Shigeyoshi; and Yamada, Tateyoshi, 4,251,649, Cl. 525-439.000.
Tektronix, Inc.: *See—*
Dagostino, Thomas P., 4,251,814, Cl. 340-722.000.
Dagostino, Thomas P., 4,251,815, Cl. 340-722.000.
Eriksen, Joern B., 4,251,835, Cl. 358-244.000.
Haven, Duane A.; and Chitwood, Donald P., 4,251,610, Cl. 430-25.000.
Navarro, Luis J.; and Dagostino, Thomas P., 4,251,754, Cl. 315-370.000.
Telkes, Maria, to Research Institute for Advanced Technology. Thermal energy storage to increase furnace efficiency. 4,250,866, Cl. 126-116.00A.
Templeton, Kenly & Company: *See—*
Leong, David S.; and Levit, Vitaly N., 4,251,055, Cl. 254-2.00B.
Templeton, William B., to Burroughs Corporation. Front and back stacker for high speed sorter/reader apparatus. 4,251,000, Cl. 209-547.000.
Tenneco Chemicals, Inc.: *See—*
Stone, Herman, 4,251,635, Cl. 521-113.000.
Terasawa, Masatoshi: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Ishikawa, Hisashi, 4,251,548, Cl. 426-3.000.
Tesch, Charles L.: *See—*
Klimek, John J.; Tesch, Charles L.; Feo, Ernest M.; and Lesky, Ronald W., 4,250,616, Cl. 29-830.000.

Teschner, Eckart: *See—*
Hesse, Wolfgang; Sattelmeyer, Richard; and Teschner, Eckart, 4,251,408, Cl. 260-29.300.
Tews, Jan H. Two-cycle engine and piston. 4,250,844, Cl. 123-73.0AV.
Texaco Development Corporation: *See—*
Livingston, David R., 4,251,461, Cl. 564-204.000.
McEntire, Edward E.; Zimmerman, Robert L.; and Klein, Howard P., 4,251,637, Cl. 521-115.000.
Muenger, James R.; Child, Edward T.; and Brent, Albert, 4,251,228, Cl. 48-197.00R.
Zimmerman, Robert L., 4,251,636, Cl. 521-114.000.
Texaco Inc.: *See—*
Cummings, William M., 4,251,670, Cl. 560-169.000.
Gass, John C.; Kerr, Noell C.; and Pittman, Robert W., 4,251,191, Cl. 417-111.000.
Hammond, Kenneth G.; and Chafetz, Harry, 4,251,380, Cl. 252-34.000.
Morse, Everett W.; and Satter, Abdus, 4,250,961, Cl. 166-252.000.
Pitts, Robert W., Jr.; Rundell, Herbert A.; and Nussbaum, Theodore W., 4,250,758, Cl. 73-650.000.
Texas Gas Transmission Corporation: *See—*
Leffert, Charles B.; Kummler, Ralph H.; and Piccirelli, Robert A., 4,251,339, Cl. 204-157.10H.
Texas Instruments Incorporated: *See—*
Hall, Joseph E., 4,251,834, Cl. 358-213.000.
Textron Inc.: *See—*
Bernier, Lornie J.; and Das, Tapan K., 4,251,582, Cl. 428-99.000.
Moertel, George B., 4,250,598, Cl. 24-205.16R.
Tezuka, Kazumasa; Hisano, Seiichi; Sasaki, Hyoichi; and Watanabe, Ikuo, to Dowa Mining Co. Ltd.; and Dowa Engineering Co. Ltd. Method for measuring the basic amount in basic aluminum sulfate solution for removal of SO_2 gas. 4,251,497, Cl. 423-242.000.
Tezuka, Shichigoro: *See—*
Ogawa, Koichi; Tezuka, Shichigoro; Terasawa, Masatoshi; and Ishikawa, Hisashi, 4,251,548, Cl. 426-3.000.
Thackaberry, S. Paul: *See—*
Chow, Wai Y.; and Thackaberry, S. Paul, 4,251,418, Cl. 260-30.200.
Theobald, Hans: *See—*
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, 4,251,539, Cl. 424-272.000.
Theobald, Laurence J. A.: *See—*
Lee, Eric C.; Lynam, Peter H.; Theobald, Laurence J. A.; and Wyeth, Harold W., 4,251,579, Cl. 428-73.000.
Theriault, Maurice N.; Teeter, Roger C.; and Wirz, Francois, to Hart Ski Mfg. Co., Inc. Water skis having a reinforced, foamed-in-place, plastic hull bonded to an aluminum deck. 4,250,585, Cl. 9-310.00A.
Thermo Murg K.G.: *See—*
Michel, Walter, 4,250,817, Cl. 110-104.00R.
Thew, Martin T.: *See—*
Colman, Derek A.; and Thew, Martin T., 4,251,368, Cl. 210-788.000.
Thieme, Peter C.; Frickel, Fritz-Frieder; Theobald, Hans; Franke, Albrecht; Lenke, Dieter; and Gries, Josef, to BASF Aktiengesellschaft. Amino derivatives of 3-alkyl-5-(2-hydroxystyryl)-isoxazoles. 4,251,539, Cl. 424-272.000.
Thomas, Lazarus D.: *See—*
Herliczek, Siegfried H.; and Thomas, Lazarus D., 4,251,572, Cl. 427-142.000.
Thompson, David L., to Medtronic, Inc. Digital cardiac pacemaker with refractory, reversion and sense reset means. 4,250,883, Cl. 128-419.0PG.
Thompson, Donald R. Educational machine. 4,250,633, Cl. 434-327.000.
Thompson, Edwin R., to Forox Corporation. Pre-closed slide mount. 4,250,641, Cl. 40-158.00B.
Thompson, George H. B., to International Standard Electric Corporation. Heterostructure laser. 4,251,298, Cl. 148-171.000.
Thomson-CSF: *See—*
Menard, Christian, 4,250,846, Cl. 123-414.000.
Thorley, Graham R., to Transportation Design & Technology, Inc. Wheelchair lift. 4,251,179, Cl. 414-545.000.
Thornburg, Donald R.; Rauch, Gary C.; and Foster, Karl, to Westinghouse Electric Corp. Method of preparing an oriented-low-alloy iron from an ingot of controlled sulfur, manganese and oxygen contents. 4,251,296, Cl. 148-120.000.
Thornburg, Donald R.: *See—*
Foster, Karl; Thornburg, Donald R.; and Rauch, Gary C., 4,251,295, Cl. 148-120.000.
Thorpe, Barrie J.: *See—*
Osborn, Peter G.; Osmond, Desmond W. J.; and Thorpe, Barrie J., 4,251,576, Cl. 428-331.000.
Tibolla, Marcello: *See—*
Doria, Gianfederico; Romeo, Ciriaco; Giraldi, Piernicola; Lauria, Francesco; Corno, Maria L.; Sberze, Piero; and Tibolla, Marcello, 4,251,531, Cl. 424-251.000.
Tieden, Jansey D.: *See—*
Cambigue, Arthur E.; Burton, James M.; and Tieden, Jansey D., 4,251,858, Cl. 364-102.000.
Tillie, Etienne. Method of, products and devices for processing polluting materials such in particular as hydrocarbons cast up by the sea, waste sludges. 4,251,362, Cl. 210-705.000.
Tillotson, Henry B.: *See—*
Comer, Robert C.; and Tillotson, Henry B., 4,250,695, Cl. 56-12.700.
Timian, Martin R. Vibratory paint applicator and system. 4,250,586, Cl. 15-22.00R.
Tinsley, William W., to Bartin Limited. Wire gripping devices. 4,250,734, Cl. 72-422.000.
Titanium Industries: *See—*
Orr, Newell H.; and Forrest, Arthur L., 4,251,337, Cl. 204-105.00R.
Titel, Siegfried: *See—*
Hohne, Per; Kontarinis, Andreas; and Titel, Siegfried, 4,251,023, Cl. 233-1.00R.
TMC Corporation: *See—*
Weigl, Erwin, 4,251,090, Cl. 280-618.000.
Tobin, Philip C. Restaurant checks. 4,251,093, Cl. 283-60.00A.
Toda Kogyo Corp.: *See—*
Takedoi, Atushi; Horiishi, Nanao; Matsui, Goro; and Toda, Koji, 4,251,592, Cl. 428-403.000.
Toda, Koji: *See—*
Takedoi, Atushi; Horiishi, Nanao; Matsui, Goro; and Toda, Koji, 4,251,592, Cl. 428-403.000.
Toepsch, Hans: *See—*
de Montigny, Armand; and Toepsch, Hans, 4,251,596, Cl. 428-447.000.
Toffolon, Roger L.; and Kart, Warren E., to Atlantic Pipe Corporation, by said Warren E. Kart. Apparatus for precasting concrete products. 4,251,196, Cl. 425-173.000.
Tohoma, Wataru: *See—*
Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shin-Ichi; and Tohoma, Wataru, 4,251,651, Cl. 526-204.000.
Tojo, Tsutomu, to Olympus Optical Co., Ltd. Microscope objective. 4,251,131, Cl. 350-414.000.
Toko, Inc.: *See—*
Takahashi, Kunihisa; and Suzuki, Kozo, 4,251,690, Cl. 179-1.0GM.
Tokuda, Kuniaki: *See—*
Yamanisi, Kazuhiko; Tokuda, Kuniaki; and Hanada, Tosiro, 4,251,629, Cl. 435-28.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ozaki, Satoru, 4,250,832, Cl. 118-724.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Murayama, Masaki, 4,251,862, Cl. 364-200.000.
Tollefsen, Gerald E.: *See—*
Rausch, Maurice K.; Erickson, Henry, deceased; Erickson, Doris, executor; Tollefsen, Gerald E.; and Kelly, Thomas W., 4,251,347, Cl. 208-57.000.
Tolnay, Pal: *See—*
Szilagyi, Geza; Kasztreiner, Endre; Tardos, Laszlo; Kosa, Edit; Jaszlits, Laszlo; Cseh, Gyorgy; Divald, Andras; Tolnay, Pal; Elek, Sandor; Elekes, Istvan; and Polgari, Istvan, 4,251,658, Cl. 544-238.000.
Tomescu, Ion: *See—*
Aron, Ioan; and Tomescu, Ion, 4,251,868, Cl. 364-427.000.
Tomoda, Masayasu; and Ueta, Yutaka, to Daikin Kogyo Co., Ltd. Co-crosslinkable blend composition comprising iodine-containing fluoroelastomer. 4,251,399, Cl. 260-4.00R.
Topalian, Samuel: *See—*
Rivier, Paul; Bucari, Claude; Topalian, Samuel; and Baud, Alain, 4,250,906, Cl. 135-1.00A.
Topex, Inc.: *See—*
Jantzen, Johannes K., 4,250,644, Cl. 40-367.000.
Toray Industries, Inc.: *See—*
Tanaka, Chiaki; Furuta, Yoko; and Naito, Nagayoshi, 4,251,652, Cl. 528-279.000.
Torborg, Ralph H.: *See—*
Bonne, Ulrich; Nelson, Lorne W.; and Torborg, Ralph H., 4,251,025, Cl. 236-14.000.
Toro Company, The: *See—*
Comer, Robert C.; and Tillotson, Henry B., 4,250,695, Cl. 56-12.700.
Toth, Jozsef: *See—*
Kraxner, Istvan; Sebok, Antal; Steiner, Janos; and Toth, Jozsef, 4,250,774, Cl. 432-15.000.
Towmotor Corporation: *See—*
Hildebrecht, Harold V., 4,250,768, Cl. 74-512.000.
Toyo Garasu Kabushiki Kaisha: *See—*
Yamato, Yoshihiro; Okada, Hideo; Takasaka, Masayuki; and Urabe, Masanori, 4,250,798, Cl. 493-306.000.
Toyo Stauffer Chemical Co., Ltd.: *See—*
Takahashi, Yoshikazu; Sunada, Yoichi; and Takitani, Masaru, 4,251,388, Cl. 252-429.00B.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kohama, Tokio; Matsui, Takeshi; Nishimatsu, Akira; Kobashi, Kiyoshi; Kawai, Hisasi; Ina, Toshikazu; and Nohira, Hidetaka, 4,250,855, Cl. 123-438.000.
Mitsuda, Tadao; Yasuda, Takeru; and Asai, Toshimichi, 4,250,706, Cl. 60-276.000.
Tanahashi, Toshio; and Fujioka, Yasuo, 4,250,708, Cl. 60-322.000.
Toyota, Kenji, to Nippon Kogaku K.K. Apparatus including battery check circuit. 4,251,151, Cl. 354-60.00L.
Trachtenberg, Samuel. Highway sign. 4,250,646, Cl. 40-582.000.
Tramco Metal Products, Inc.: *See—*
Trammell, Edward L.; and Kelley, Hugh D., 4,250,987, Cl. 198-530.000.
Trammell, Edward L.; and Kelley, Hugh D., to Tramco Metal Products, Inc. Flow control gate apparatus. 4,250,987, Cl. 198-530.000.
Transco, Inc.: *See—*
Skuran, Victor, 4,250,678, Cl. 52-478.000.
Waite, William, 4,251,598, Cl. 428-603.000.
Transportation Design & Technology, Inc.: *See—*
Thorley, Graham R., 4,251,179, Cl. 414-545.000.

Traxler, Peter, to Ciba-Geigy Corporation. Unsaturated or substituted methyl ethers having antibiotic activity. 4,251,517, Cl. 424-180.000.
Traylor, Paul L. Valve for water treatment equipment. 4,250,920, Cl. 137-625.290.
Tripp, Roger N.: *See—*
Brown, Charles D.; Plummer, Cole N.; Tripp, Roger N.; and Fernald, Maurice E., 4,251,190, Cl. 417-68.000.
Trofimov, Boris A.: *See—*
Voronkov, Mikhail G.; Trofimov, Boris A.; Krjuchkov, Vasily V.; Amosova, Svetlana V.; Skvortsov, Jury M.; Volkov, Anatoly N.; Malkina, Anastasia G.; and Mushy, Roman Y., 4,251,666, Cl. 549-29.000.
Trottochau, Lawrence D., to Loram Maintenance of Way. Undertrack fabric applicator. 4,250,812, Cl. 104-2.000.
Truck, Robert. Rotary piston engine. 4,250,851, Cl. 123-240.000.
TRW Inc.: *See—*
Martin, Jon W., 4,251,432, Cl. 260-42.140.
Tseluiko, Jury I.: *See—*
Kudinov, Gennady A.; Lysenko, Evgeny E.; Filipiev, Oleg V.; Kasyanov, Grigory I.; Tseluiko, Jury I.; Gorodetsky, Yakov I.; and Kotlyar, Viktor D., 4,250,840, Cl. 122-6.00A.
Tsubokawa, Masakatsu: *See—*
Suzuki, Noritoshi; Tsubokawa, Masakatsu; Bathum, Roy N., Jr.; and Selset, Ron S., 4,251,060, Cl. 254-356.000.
Tsuji, Sadahiko, to Canon Kabushiki Kaisha. Large aperture telephoto-lens. 4,251,133, Cl. 350-465.000.
Tsutsui, Kyoji: *See—*
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,613, Cl. 430-72.000.
Sasaki, Masaomi; Sakai, Kiyoshi; Hashimoto, Mitsuru; Ohta, Masafumi; and Tsutsui, Kyoji, 4,251,614, Cl. 430-79.000.
Tuff-Kote Dinol Aktiebolag: *See—*
Holm, Claes H.; and Paulsson, John, 4,251,573, Cl. 427-236.000.
Tulley, Margaret: *See—*
Brookes, Robert F.; Godson, David H.; Greenwood, Douglas; Tulley, Margaret; and Wakerley, Stanley B., 4,251,262, Cl. 71-92.000.
Tunder, Richard S., to General Electric Company. Gallium plating. 4,251,328, Cl. 204-15.000.
Tuson, Samuel; and Ghilardi, Jean-Pierre, to Entrepise d'Equipments Mechanique set Hydrauliques E.M.H. Rotary joint device with multiple piping passages, in particular for loading or transfer columns on marine sites. 4,250,918, Cl. 137-580.000.
Tutihasi, Simpei: *See—*
Chu, Joseph Y. C.; and Tutihasi, Simpei, 4,251,612, Cl. 430-59.000.
Uchida, Isamu, to Laurel Bank Machine Co., Ltd. Apparatus for binding paper sheets. 4,250,692, Cl. 53-528.000.
Uchida, Isamu; Uchida, Shinya; and Ohsako, Kyoichi, to Laurel Bank Machine Co., Ltd. Money exchanger apparatus. 4,251,867, Cl. 364-408.000.
Uchida, Masayoshi: *See—*
Ono, Tsuyoshi; Shibata, Norio; Oguri, Katsuhiko; Uchida, Masayoshi; Sato, Kazuhiro; and Sato, Hidetoshi, 4,251,695, Cl. 369-136.000.
Uchida, Shinya: *See—*
Uchida, Isamu; Uchida, Shinya; and Ohsako, Kyoichi, 4,251,867, Cl. 364-408.000.
Uchikune, Mamoru: *See—*
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, 4,251,791, Cl. 335-302.000.
Uddeholms Aktiebolag: *See—*
Larsson, Owe G. T.; Lindstrom, Rune H.; and Jonsson, Bo L. L., 4,251,266, Cl. 75-10.00R.
Ueda, Tunehiro: *See—*
Koshikawa, Takao; Ueda, Tunehiro; and Fukushima, Katsuji, 4,250,945, Cl. 164-86.000.
Ueta, Yutaka: *See—*
Tomoda, Masayasu; and Ueta, Yutaka, 4,251,399, Cl. 260-4.00R.
Ugo, Franco: *See—*
Cresti, Marcello; and Ugo, Franco, 4,251,161, Cl. 400-144.200.
Umeda, Yasusi: *See—*
Kimoto, Koichi; Umeda, Yasusi; Saito, Shin; Tanabe, Kunsei; and Takimoto, Yasuyuki, 4,251,622, Cl. 430-332.000.
Umeki, Shinji: *See—*
Hamabata, Toshihiro; and Umeki, Shinji, 4,251,504, Cl. 423-632.000.
Umemoto, Toshio, to Citizen Watch Co., Ltd. Battery assembly for electronic timepieces. 4,251,604, Cl. 429-98.000.
Umino, Naozi: *See—*
Nakagawa, Eishiro; Miyamoto, Taketoshi; Umino, Naozi; and Oyama, Hirosi, 4,251,164, Cl. 401-216.000.
Union Carbide Corporation: *See—*
Beatty, Theodore R., 4,251,602, Cl. 429-54.000.
Chang, Ching M., 4,251,234, Cl. 55-2.000.
Quimby, Daniel J., 4,251,661, Cl. 546-170.000.
Sara, Raymond V., 4,251,272, Cl. 75-200.000.
United States Gypsum Company: *See—*
Palmer, Jay W., 4,251,416, Cl. 260-29.70S.
United States of America
Air Force: *See—*
Gardenghi, Robert A.; and Hooper, Edward H., 4,251,741, Cl. 307-260.000.
Goldie. Harry; and Stitzer, Steven N., 4,251,786, Cl. 333-17.00L.
Hwang. Ying C.; and Lunden, John W., 4,251,738, Cl. 307-231.000.
Mears, Shawn P., 4,251,765, Cl. 324-51.000.
Army: *See—*
Class, Charles A.; and Scarpati, Thomas S., 4,251,309, Cl. 156-245.000.
Voigt, H. William, Jr., 4,251,301, Cl. 149-12.000.
Energy: *See—*
Brackenbush, Larry W.; and Hoenes, Glenn R., 4,251,123, Cl. 312-1.000.
Johnson, Richard; and Steinberg, Meyer, 4,251,340, Cl. 204-159.110.
Sim, James W.; and Kinoshita, Kimio, 4,251,600, Cl. 429-12.000.
Health, Education & Welfare: *See—*
Carlson, Walter S.; Samueloff, Shlomo; and Wasserman, Donald E., 4,250,891, Cl. 128-744.000.
Interior: *See—*
Roepke, Wallace W., 4,251,109, Cl. 299-12.000.
Navy: *See—*
Swenson, Richard C., 4,251,794, Cl. 338-26.000.
U.S. Philips Corporation: *See—*
Bakker, Eppe; and Riemersma, Pieter, 4,250,617, Cl. 30-34.200.
Bouwhuis, Gijsbertus; and Lamboo, Theodorus F., 4,251,160, Cl. 356-401.000.
Compen, Johannes M. A. A.; Eisses, Reinhart C. W.; Panis, Constantius J. W.; and Paridaens, Cornelius J. H., 4,251,749, Cl. 313-479.000.
Klomp, Johannes T.; and Vrugt, Peter J., 4,251,254, Cl. 65-374.00R.
Le Mair, Willem; and Vereijken, Antonius N. C., 4,251,801, Cl. 340-147.0SY.
Roza, Engel, 4,251,886, Cl. 375-18.000.
van Tongeren, Hendricus F. J. J.; Schampers, Paulus P. M.; Weijland, Willem P.; and Carasso, Marino G., 4,251,748, Cl. 313-371.000.
United States Steel Corporation: *See—*
Monta, Louis A., 4,250,946, Cl. 164-137.000.
United Technologies Corporation: *See—*
Coleman, Allen K., 4,251,735, Cl. 307-46.000.
Coleman, Allen K., 4,251,736, Cl. 307-46.000.
Russell, Sid, 4,251,601, Cl. 429-17.000.
University of California, The Regents of the: *See—*
Perrin, Charles L., 4,251,447, Cl. 260-333.000.
University of Delaware, The: *See—*
Barnett, Allen M., 4,251,286, Cl. 136-260.000.
Dalal, Vikram L., 4,251,287, Cl. 136-258.000.
University of Minnesota, The Regents of the: *See—*
Scriven, L. Edward, II; Seeto, Yee; and Manning, Carl D., 4,250,741, Cl. 73-64.400.
University of Utah: *See—*
Owen, Jeffrey D.; and Brown, Harold M., 4,251,470, Cl. 260-990.000.
University Patents, Inc.: *See—*
Sievers, Robert E.; and Wenzel, Thomas J., 4,251,233, Cl. 44-68.000.
Uno, Koki; and Youda, Hirohumi, to Kyotaru Co., Ltd. Rice-ball rolled in laver. 4,251,552, Cl. 426-115.000.
UOP Inc.: *See—*
Engel, Dusan J., 4,251,675, Cl. 585-422.000.
Habdas, Edward P.; and Aaron, Jon D., 4,251,342, Cl. 204-195.00S.
Up-Right, Inc.: *See—*
Horn, Darrell C.; and Claxton, Gerald L., 4,250,700, Cl. 56-330.000.
Upjohn Company, The: *See—*
Axen, Udo F., 4,251,466, Cl. 568-330.000.
Bundy, Gordon L., 4,251,463, Cl. 564-454.000.
Moon, Malcolm W., 4,251,438, Cl. 260-112.50R.
Sih, John C., 4,251,464, Cl. 564-453.000.
Whaley, Howard A.; and Coats, John H., 4,251,511, Cl. 424-122.000.
Ura, Shigeru: *See—*
Kawakami, Shigenao; Ura, Shigeru; Jinno, Naoyoshi; Isaoka, Shin-Ichi; and Tohoma, Wataru, 4,251,651, Cl. 526-204.000.
Urabe, Masanori: *See—*
Yamato, Yoshihiro; Okada, Hideo; Takasaka, Masayuki; and Urabe, Masanori, 4,250,798, Cl. 493-306.000.
Ursprung, Karl: *See—*
Zimmermann, Franz; and Ursprung, Karl, 4,251,156, Cl. 355-41.000.
Uthe, P. Michael: *See—*
Smith, Richard D.; and Uthe, P. Michael, 4,250,628, Cl. 34-1.000.
Utner, Ferdinand; Vetter, Harald; and Vilsmeier, Gerhart, to Siemens Aktiengesellschaft. Process for the production of electric stacked capacitors. 4,250,604, Cl. 29-25.420.
Utsch, Francis V.; de la Burde, Roger Z.; and Aument, Patrick E., to Philip Morris Incorporated. Carbon dioxide impregnation of tobacco by super cooling. 4,250,898, Cl. 131-140.00P.
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Vickland, Jack M., to Ford Aerospace & Communications Corp. Variable support apparatus. 4,251,819, Cl. 343-882.000.

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Madgavkar, Ajay M.; Vogel, Roger F.; and Swift, Harold E., 4,250,962, Cl. 166-256.000.

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Rothen, Johann; and Singbartl, Gunther, 4,251,118, Cl. 303-91.000.

Wada, Shigenori: *See—*
Morita, Yoshiharu; Itagaki, Takaharu; Ito, Tsuyoshi; and Wada, Shigenori, 4,251,442, Cl. 260-239.100.

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Braden, Rudolf; and Wagner, Kuno, 4,251,462, Cl. 564-455.000.

Wagstaff, Robert A.; Campbell, Steven J.; Cozine, Mark L.; Christenson, Marc; and Nooyen, Ray E., to Sperry Corporation. Anti-wrap means. 4,250,896, Cl. 130-27.00T.

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Knor, Bernhard; Payrhammer, Bernd; and Wahl, Helmut, 4,251,157, Cl. 355-68.000.

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Waldman, Herbert H. Telephone call restricting apparatus. 4,251,692, Cl. 179-18.0DA.

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Walton, Richard E., II: *See—*
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Wamser, Anton: *See—*
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Ward, Stanley R. Plastic sheet support clip. 4,250,601, Cl. 24-264.000.
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Wasserman, Donald E.: *See*—
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Wasserman, Kurt J. Double tubular thermal energy storage element. 4,250,958, Cl. 165-46.000.
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Watanabe, Ikuo: *See*—
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Webster, Frank G.: *See*—
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Webster, Joseph R.: *See*—
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Weinstock, Joseph, to SmithKline Corporation. 3-Allyl-7,8-dihydroxy-6-halo-1-(4-hydroxyphenyl)-2,3,4,5-tetrahydro-1H-3-benzazepine derivatives. 4,251,525, Cl. 424-244.000.
Weissman, Bernard, to IPCO Corporation. Dental positioning device. 4,251,210, Cl. 433-76.000.
Weissman, Bernard, to IPCO Corporation. Dental splinting device. 4,251,216, Cl. 433-215.000.
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Welch, Cletus N.; and Snodgrass, John O., to PPG Industries, Inc. Porous nickel cathode. 4,251,478, Cl. 204-98.000.
Welker, Peter. Miniature baseball game construction. 4,251,074, Cl. 273-89.000.
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Wessel, Wolf; Stumpp, Gerhard; and Stein, Volkhard, to Robert Bosch GmbH. Fuel injection system. 4,250,848, Cl. 123-452.000.
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Kaneko, Yoshikazu; Suzuka, Takashi; and Okuno, Tadahide, 4,251,854, Cl. 362-5.000.
West, Peter M.: *See*—
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Whelchel, Robert C.: *See*—
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White, Fred K., to American Hospital Supply Corporation. Disposable multi-chamber cuvette. 4,251,159, Cl. 356-246.000.
White, William I., to Miles Laboratories, Inc. Sensitizers for peroxidative activity tests. 4,251,222, Cl. 23-230.00B.
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Wiltgen, Bernard M., Jr., to S & C Electric Company. Arc extinguishing material comprising dicyandiamide. 4,251,699, Cl. 200-144.00C.
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Worschischek, Rainer; and Schuss, Werner, to Siemens Aktiengesellschaft. Dental handpiece. 4,251,212, Cl. 433-126.000.
Worsham, Daniel A.; Ashley, Jack E.; and Munoz, Joseph M., to Pacific Western Systems Inc. Probe head for an automatic semiconductive wafer prober. 4,251,772, Cl. 324-158.00P.
Wright, Winston F. Sluice construction. 4,251,357, Cl. 209-437.000.
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Angevine, John S.; Frame, Scott W.; and Yacura, Stephen B., 4,250,816, Cl. 110-101.0CF.
Yagi, Naoki: *See*—
Ohyabu, Shuzo; Kawai, Syuji; Akasu, Hiroyuki; Akiya, Takeo; Matsumura, Keiji; Yagi, Naoki; Kim, Kwang Young; and Nakaji, Tarushige, 4,251,567, Cl. 426-580.000.
Yakobshe, Richard Y.: *See*—
Brovman, Mikhail Y.; Marchenko, Ivan K.; Kozy, Nikolai M.; Efimov, Viktor A.; and Yakobshe, Richard Y., 4,250,949, Cl. 164-425.000.
Yama, Frank: *See*—
Hofer, Alan; and Yama, Frank, 4,251,807, Cl. 340-384.00R.
Yamada, Takahiko; and Morita, Kozo, to Nippon Electric Co., Ltd.; and Nippon Telegraph and Telephone Public Corporation. Variable resonance type amplitude equalizing circuit. 4,251,783, Cl. 333-28.00R.
Yamada, Tateyoshi: *See*—
Hara, Shigeyoshi; and Yamada, Tateyoshi, 4,251,649, Cl. 525-439.000.
Yamada, Yasuyuki: *See*—
Masuyama, Kenichi; Kitamoto, Tatsuji; and Yamada, Yasuyuki, 4,251,843, Cl. 360-137.000.
Yamaguchi, Katsuji: *See*—
Hara, Kunio; Kitamura, Osamu; and Yamaguchi, Katsuji, 4,250,596, Cl. 24-73.0HS.
Yamaguchi, Takeyoshi. Cigarette holder. 4,250,901, Cl. 131-202.000.
Yamaguchi, Takeyoshi. Wide-angle door viewer. 4,251,127, Cl. 350-69.000.
Yamaji, Akihiko: *See*—
Yamaki, Junichi; and Yamaji, Akihiko, 4,251,607, Cl. 429-194.000.
Yamaki, Junichi; and Yamaji, Akihiko, to Nippon Telegraph and Telephone Public Corporation. Nonaqueous battery with organic compound cathode. 4,251,607, Cl. 429-194.000.
Yamamoto Electric Industrial Co., Ltd.: *See*—
Soeda, Katsuji; Oyama, Mitsuhiro; and Sakuma, Fumio, 4,251,796, Cl. 338-176.000.
Yamamoto, Hiroshi; Suzuki, Shigehisa; and Tabata, Osamu, to Mitsubishi Denki Kabushiki Kaisha. Floating head device. 4,251,839, Cl. 360-103.000.
Yamanisi, Kazuhiko; Tokuda, Kuniaki; and Hanada, Tosiro, to Wako Pure Chemical Industries, Ltd. Determination of hydrogen peroxide. 4,251,629, Cl. 435-28.000.
Yamanouchi Pharmaceutical Co., Ltd.: *See*—
Kubo, Kazuo; Ito, Noriki; Souzu, Isao; Isomura, Yasuo; Homma, Hiroshige; and Murakami, Masuo, 4,251,533, Cl. 424-256.000.
Yamaoka, Shigeyuki: *See*—
Nakajima, Tomoo; Yamaoka, Shigeyuki; and Tanaka, Seiji, 4,251,103, Cl. 296-195.000.
Yamase, Yukio: *See*—
Nakada, Hisao; Harada, Michisuke; Yamase, Yukio; and Matsui, Ryuji, 4,251,414, Cl. 260-297.0NR.
Yamato Sangyo Inc.: *See*—
Nishikawa, Shigeo, 4,251,226, Cl. 48-192.000.
Yamato, Yoshihiro; Okada, Hideo; Takasaka, Masayuki; and Urabe, Masanori, to Toyo Garasu Kabushiki Kaisha. Method of and device for fabricating plastic sleeves. 4,250,798, Cl. 493-306.000.
Yamazaky Iron Works: *See*—
Morishita, Akio; Mizukado, Masayoshi; and Fukumura, Naoe, 4,250,785, Cl. 83-552.000.
Yanagihara, Nobuyuki: *See*—
Matsumoto, Isao; Iwaki, Tsutomu; and Yanagihara, Nobuyuki, 4,251,603, Cl. 429-94.000.
Yanagisawa, Kiyoshi; Uchikune, Mamoru; Tagami, Mutsukazu; Shimizu, Taketo; Horiuchi, Kunio; and Sakaguchi, Hiroo, to Kanetsu Kogyo Kabushiki Kaisha. Magnetic base. 4,251,791, Cl. 335-302.000.
Yano, Takashi: *See*—
Miyakawa, Seiichi; and Yano, Takashi, 4,251,152, Cl. 355-3.00R.
Yasuda, Takeru: *See*—
Mitsuda, Tadao; Yasuda, Takeru; and Asai, Toshimichi, 4,250,706, Cl. 60-276.000.
Yeda Research & Development Co., Ltd.: *See*—
Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, 4,250,894, Cl. 128-774.000.
Yerkes, John W., to Atlantic Richfield Company. Photovoltaic device with specially arranged luminescent collector and cell. 4,251,288, Cl. 136-247.000.
Yerushalmi, Shmuel: *See*—
Frei, Ephraim H.; Sollish, Bruce D.; Yerushalmi, Shmuel; Lang, Sidney B.; and Moshitzky, Mordechai, 4,250,894, Cl. 128-774.000.
Yoldas, Bulent E.; and Yoldas, Lubomyra A., to Westinghouse Electric Corp. Diffusion of dopant from optical coating and single step formation of PN junction in silicon solar cell and coating thereon. 4,251,285, Cl. 136-256.000.
Yoldas, Lubomyra A.: *See*—
Yoldas, Bulent E.; and Yoldas, Lubomyra A., 4,251,285, Cl. 136-256.000.
Yoneyama, Masakazu: *See*—
Minamizono, Junji; Yoneyama, Masakazu; and Kishimoto, Shinzo, 4,251,626, Cl. 430-527.000.
Yoshida Kogyo, K.K.: *See*—
Nakamura, Hiroshi, 4,250,781, Cl. 83-210.000.
Yoshida, Mitunari: *See*—
Ariga, Kazuo; Oinuma, Norimasa; Akanuma, Youichiro; and Yoshida, Mitunari, 4,250,645, Cl. 40-545.000.
Yoshikoshi, Seiji: *See*—
Nakada, Hisao; Harada, Michisuke; and Yoshikoshi, Seiji, 4,251,415, Cl. 260-29.7NR.
Yoshitake, Toshihiko: *See*—
Harada, Kazuto; and Yoshitake, Toshihiko, 4,251,643, Cl. 525-51.000.
Yoshizawa, Katsuyuki: *See*—
Kubota, Hitoshi; and Yoshizawa, Katsuyuki, 4,251,117, Cl. 303-24.00F.
Youd, Arthur: *See*—
Carswell, William D.; Youd, Arthur; and MacPhail, Alexander C. B., 4,251,431, Cl. 252-40.700.
Youda, Hirohumi: *See*—
Uno, Koki; and Youda, Hirohumi, 4,251,552, Cl. 426-115.000.
Young, Alastair J., to Automotive Products Limited. Fluid braking systems. 4,251,116, Cl. 303-22.00R.
Young, Frederick A.; and Montgomery, Charles F., to Hughes Aircraft Company. Adjustable coupling cavity filter. 4,251,787, Cl. 333-209.000.
Young, Jack C.: *See*—
Vagelatos, Nicholas; Steinman, Donald K.; John, Joseph; and Young, Jack C., 4,251,724, Cl. 250-264.000.
Yu, Wellington C., to International Business Machines Corporation. Method and apparatus for storing and reconstructing Chinese-like characters. 4,251,871, Cl. 364-518.000.
Yukimoto, Kohji: *See*—
Kobayashi, Osamu; Yukimoto, Kohji; and Hayashi, Hiroshi, 4,250,905, Cl. 133-5.00R.
Zabotin, Alexandr A.: *See*—
Galperin, Alexandr L.; Onikov, Eduard A.; Zabotin, Alexandr A.; and Loschilin, Evgeny D., 4,250,932, Cl. 139-436.000.
Zaffrann, Albert A.; Borchardt, Robert E.; and Grabarczyk, Frank A., to Allen-Bradley Company. Disconnect switch. 4,251,700, Cl. 200-146.00R.
Zaklad Nr 2 Hydomat Fabryka Pras Automatycznych Ponar-Plasomat: *See*—
Nowak, Edmund, 4,250,805, Cl. 100-269.00B.
Zamek, Otto S., to General Electric Company. Polyester wire enamels. 4,251,423, Cl. 260-33.20R.

Zamozdik, Talivaldis V.: *See*—
Lusis, Andrei R.; Klyavin, Yanis K.; Zamozdik, Talivaldis V.; Lagzdons, Juris L.; Rode, Oyars A.; and Pinnis, Yanis Y., 4,251,138, Cl. 350-357.000.

Zanetti, Guido: *See*—
Kompis, Ivan; Rey-Bellet, Gerald; and Zanetti, Guido, 4,251,454, Cl. 260-465.00E.

Zante, Hubert A.; Pascal, Pierre B.; Schilling, Michel E.; and Lamic, Jackie G., to Societe Nationale des Poudres et Explosifs; and Societe Luchaire. Apparatus for the connection between two stages of a self-propelled engine. 4,250,705, Cl. 60-225.000.

Zehnder, Gottlieb, to BBC Brown, Boveri & Company, Limited. Method and apparatus for supercharging an internal combustion engine. 4,250,711, Cl. 60-605.000.

Zeleny, Klaus P., to Sulzer Brothers Limited. Guide for a weft-picking means. 4,250,931, Cl. 139-341.000.

Zenith Radio Corporation: *See*—
Wichmann, Janice L., 4,250,602, Cl. 29-25.140.

Zhukovsky, Alexandr V.: *See*—
Vinokurov, Alexandr A.; Zhukovsky, Alexandr V.; Zotov, Igor L.; Popov, Jury S.; Filippov, Iosif F.; and Ponedelko, Vladimir N., 4,250,744, Cl. 73-118.000.

Zidman, Michael J.: *See*—
Barlow, Gordon A.; Krutsch, John R.; and Zidman, Michael J., 4,250,656, Cl. 46-44.000.

Ziegler, George E., Jr.; and Hutcherson, Henry S., to Fieldcrest Mills, Inc. Apparatus for hemming fabric using a hot melt adhesive. 4,251,312, Cl. 156-465.000.

Zimmerman, Robert L., to Texaco Development Corporation. Stannous halide complexes and their use in preparing polyurethane foams. 4,251,636, Cl. 521-114.000.

Zimmerman, Robert L.: *See*—
McEntire, Edward E.; Zimmerman, Robert L.; and Klein, Howard P., 4,251,637, Cl. 521-115.000.

Zimmermann, Franz; and Ursprung, Karl, to Gretag Aktiengesellschaft. Method of and apparatus for making photographic prints. 4,251,156, Cl. 355-41.000.

Zink, Rudolf: *See*—
Loew, Peter; Zink, Rudolf; and Koller, Stefan, 4,251,656, Cl. 542-417.000.

Zinke, Horst; and Lorenz, Joachim, to CIBA-Geigy Corporation. Sulphur-containing esters of phosphoric acid. 4,251,469, Cl. 260-942.000.

Zinsser, Rudolf; and Prestl, Karl, to Heidolph & Zinsser GmbH. Fan. 4,251,189, Cl. 416-240.000.

Zobele, Fulvio, to Zobele Industrie Chimiche S.p.A. Heating device for tablets containing evaporable substances. 4,251,714, Cl. 219-275.000.

Zobele Industrie Chimiche S.p.A.: *See*—
Zobele, Fulvio, 4,251,714, Cl. 219-275.000.

Zolotarev, Anatoly K.: *See*—
Andreev, Evgeny I.; Bykov, Mikhail A.; Zolotarev, Anatoly K.; and Sazhin, Dmitry S., 4,250,929, Cl. 137-607.000.

Zook, J. David, to Honeywell Inc. Cold substrate growth technique for silicon-on-ceramic. 4,251,570, Cl. 427-74.000.

Zotov, Igor L.: *See*—
Vinokurov, Alexandr A.; Zhukovsky, Alexandr V.; Zotov, Igor L.; Popov, Jury S.; Filippov, Iosif F.; and Ponedelko, Vladimir N., 4,250,744, Cl. 73-118.000.

Zubalya, Valentina I., administrator: *See*—
Abulkasim ogly Kerimov, Niyazi; Israfil ogly Mekhtiev, Rafik; Gussak, Lev A.; Maskenskov, Konstantin M.; Evart, Garri V.; Akhmed ogly Talybov, Malik; Tagiev, Ruslan D.; Mozokhin, Nikolai G., deceased; and Zubalya, Valentina I., administrator, 4,250,852, Cl. 123-260.000.

Zwan, Bryan J., to E-Cel Corporation. Electromagnetic radiation transducer. 4,251,679, Cl. 136-244.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 17TH DAY OF FEBRUARY, 1981

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Abegg, Jean-Louis; and Gayet, Claire, to L'Oreal. Process for permanently waving hair using a self-heating neutralizing composition containing a water-soluble sulfite, metabisulfite of bisulfite and H_2O_2. Re. 30,516, Cl. 132-7.000.

Baltare, Gunnar: *See*—
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, Re. 30,522, Cl. 310-168.000.

Chenoweth, Vaughn C.: *See*—
Faulkner, Duane H.; Sanford, Steven D.; and Chenoweth, Vaughn C., Re. 30,521, Cl. 13-6.000.

Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., to Iomec, Inc. High speed printer. Re. 30,515, Cl. 101-93.140.

Dunlop Holdings Limited: *See*—
French, Tom, Re. 30,518, Cl. 152-209.00R.

Eaton Corporation: *See*—
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, Re. 30,522, Cl. 310-168.000.

Faulkner, Duane H.; Sanford, Steven D.; and Chenoweth, Vaughn C., to Johns-Manville Corporation. Primary electrode arrangement for high temperature melting furnace. Re. 30,521, Cl. 13-6.000.

French, Tom, to Dunlop Holdings Limited. Pneumatic tire wear indicating tread pattern. Re. 30,518, Cl. 152-209.00R.

Gardiner, Derek J.: *See*—
Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., Re. 30,515, Cl. 101-93.140.

Gayet, Claire: *See*—
Abegg, Jean-Louis; and Gayet, Claire, Re. 30,516, Cl. 132-7.000.

Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, to Eaton Corporation. Rotor for wheel speed sensor assembly. Re. 30,522, Cl. 310-168.000.

Hougen, Everett D. Accessory support plates for a magnet base drill. Re. 30,519, Cl. 408-76.000.

Iomec, Inc.: *See*—
Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., Re. 30,515, Cl. 101-93.140.

Jacobs, Gerald L.: *See*—
Gee, Thomas A.; Jacobs, Gerald L.; and Baltare, Gunnar, Re. 30,522, Cl. 310-168.000.

Johns-Manville Corporation: *See*—
Faulkner, Duane H.; Sanford, Steven D.; and Chenoweth, Vaughn C., Re. 30,521, Cl. 13-6.000.

Lazarow, Seldan A.: *See*—
Curtiss, Robert H.; Gardiner, Derek J.; and Lazarow, Seldan A., Re. 30,515, Cl. 101-93.140.

L'Oreal: *See*—
Abegg, Jean-Louis; and Gayet, Claire, Re. 30,516, Cl. 132-7.000.

McClocklin, Samuel B., to Owatonna Tool Company. Rotary valve. Re. 30,517, Cl. 137-625.210.

Owatonna Tool Company: *See*—
McClocklin, Samuel B., Re. 30,517, Cl. 137-625.210.

Pierron, Claude R. Method of manufacturing jackets and like garments. Re. 30,520, Cl. 156-250.000.

Sanford, Steven D.: *See*—
Faulkner, Duane H.; Sanford, Steven D.; and Chenoweth, Vaughn C., Re. 30,521, Cl. 13-6.000.

LIST OF DESIGN PATENTEES

Adam, Brian D.; and Adam, Douglas G. Base support mount for a heat pump or the like. 258,307, 2-17-81, Cl. D23-127.000.

Adam, Douglas G.: *See*—
Adam, Brian D.; and Adam, Douglas G., 258,307, Cl. D23-127.000.

Aikawa, Chuta; and Minemura, Keizo, to Tamura Electric Works, Ltd. Telephone set with a digital clock. 258,288, 2-17-81, Cl. D14-53.000.

Airway Industries, Inc.: *See*—
Davis, Michael, 258,251, Cl. D3-71.000.

Alsman, Bill R. Truck cab clearance light. 258,315, 2-17-81, Cl. D26-28.000.

Amarantine N.V.: *See*—
Peck, Francis D., 258,255, Cl. D6-137.000.

American Hospital Supply Corporation: *See*—
Curran, James F.; and Trafton, John E., 258,266, Cl. D24-56.000.

Applefield, Jerome: *See*—
Rech, Jakob, 258,265, Cl. D9-449.000.

Applefield, Sheldon: *See*—
Rech, Jakob, 258,265, Cl. D9-449.000.

Atkins, Harry D. Loose-fill packing element. 258,267, 2-17-81, Cl. D9-456.000.

Axel, Edwin. Shipping container. 258,268, 2-17-81, Cl. D9-426.000.

Bengtsson, Sigurd W. Tooth cleaning implement, or similar article. 258,318, 2-17-81, Cl. D28-64.000.

Bennett, Joe Y.: *See*—
Pittman, Benny R.; and Bennett, Joe Y., 258,297, Cl. D20-42.000.

Berkey-Colortran, Inc.: *See*—
Leon, Gordon T., 258,314, Cl. D26-63.000.

Bleakley, John M. Liquor bar cabinet. 258,253, 2-17-81, Cl. D6-154.000.

Booth, Vernard S.; and Oswalt, Billy W., to Manville Forest Products Corporation. Box blank. 258,271, 2-17-81, Cl. D9-433.000.

Bounds, William E. Condiment mill. 258,257, 2-17-81, Cl. D7-53.000.

Boykin, Richard A.; and Hamilton, Gordon A., to Champion International Corporation. Two piece produce box. 258,269, 2-17-81, Cl. D9-431.000.

Brookfield, Helen K. Diaper cover. 258,245, 2-17-81, Cl. D2-10.000.

Brown, James D. Storage unit. 258,256, 2-17-81, Cl. D6-170.000.

Burdock, Patrick T. A., to Rovex Limited. Toy fire engine. 258,300, 2-17-81, Cl. D21-133.000.

Champion International Corporation: *See*—
Boykin, Richard A.; and Hamilton, Gordon A., 258,269, Cl. D9-431.000.

Charcornac, Georges, to Manufacture Francaise d'Armes et Cycles de Saint-Etienne S.A. Rifle with two barrels. 258,304, 2-17-81, Cl. D22-6.000.

CITC Industries Inc.: *See*—
Cohen, William J., 258,247, Cl. D2-279.000.

Cohen, William J., to CITC Industries Inc. Simulative sports shoe. 258,247, 2-17-81, Cl. D2-279.000.

Collister, Kenneth D.; and Pugh, Jerry T., to Miles Laboratories, Inc. Spectrophotometer. 258,273, 2-17-81, Cl. D10-46.000.

Combi Co., Ltd.: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 258,301, Cl. D21-63.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Yamamoto, Yoshio, 258,303, Cl. D21-74.000.

Compagnie des Metaux Precieux: *See*—
Loiseau, Jacques, 258,278, Cl. D11-87.000.

Cowen, Wesley M. Bookmark for a paperback book. 258,296, 2-17-81, Cl. D19-34.000.

Cox, Zula B. Toy horse. 258,319, 2-17-81, Cl. D21-165.000.

Curran, James F.; and Trafton, John E., to American Hospital Supply Corporation. Vessel for supporting laboratory test samples. 258,266, 2-17-81, Cl. D24-56.000.

Dargatz, Dayton O., to Plessey Peripheral Systems. Receive only high speed impact printer. 258,285, 2-17-81, Cl. D14-50.000.

Data Card Corporation: *See*—
Hewitt, Donald W.; and Seibel, David D., 258,292, Cl. D19-3.000.

Davis, Michael, to Airway Industries, Inc. Luggage case. 258,251, 2-17-81, Cl. D3-71.000.

Dickinson, Robert J.; and Wagner, James L. Combined self-righting sinker and lure support. 258,305, 2-17-81, Cl. D22-30.000.

Di Marchi, Silvio J.: *See*—
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 258,272, Cl. D10-58.000.

Duin, Ed. Ash tray. 258,316, 2-17-81, Cl. D27-27.000.

Eldon Industries, Inc.: *See*—
Evenson, Mel, 258,295, Cl. D19-76.000.

Electronic Molding Corporation: *See*—
Murphy, James V., 258,281, Cl. D13-12.000.

Evenson, Mel, to Eldon Industries, Inc. Card file. 258,295, 2-17-81, Cl. D19-76.000.

Ferguson, Douglas J.: *See*—
Mareydt, Ray G.; Kowalski, Daniel J.; and Ferguson, Douglas J., 258,263, Cl. D8-382.000.

Florists' Transworld Delivery Association: *See—*
Waterfield, Martin J., 258,277, Cl. D11-153.000.

Four Star Corporation: *See—*
Mareydt, Ray G.; Kowalski, Daniel J.; and Ferguson, Douglas J., 258,263, Cl. D8-382.000.
Mareydt, Ray G., 258,264, Cl. D8-382.000.
Mareydt, Ray G., 258,280, Cl. D8-382.000.

Fox Valley Instrument Company: *See—*
Greenlee, Hugh T.; Hess, Roy P.; and McKinnon, Donald C., 258,274, Cl. D10-112.000.

Fried, Michael: *See—*
Weissman, Richard; Haack, Christian; and Fried, Michael, 258,308, Cl. D30-15.000.

Gass Industries, Inc.: *See—*
Gass, Philip A., 258,252, Cl. D6-28.000.

Gass, Philip A., to Gass Industries, Inc. Support stand for a hanging seat or similar article. 258,252, 2-17-81, Cl. D6-28.000.

General Electric Company: *See—*
Klucznik, Paul J., 258,284, Cl. 14-6.000.

Gillette Company, The: *See—*
Gray, Michael J., 258,270, Cl. D9-342.000.

Gilmore, Arthur: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 258,272, Cl. D10-58.000.

Goldman, Jerome N.: *See—*
Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, 258,272, Cl. D10-58.000.

Goldman, Marvin A.; Goldman, Jerome N.; Di Marchi, Silvio J.; and Gilmore, Arthur, to Penn-Plax Plastics, Inc. Aquarium thermometer. 258,272, 2-17-81, Cl. D10-58.000.

Gray, Michael J., to Gillette Company, The. Razor holder. 258,270, 2-17-81, Cl. D9-342.000.

Greenlee, Hugh T.; Hess, Roy P.; and McKinnon, Donald C., to Fox Valley Instrument Company. Timing light. 258,274, 2-17-81, Cl. D10-112.000.

Gustafsson, Ingmar, to Plasto KB KY. Toy digger. 258,298, 2-17-81, Cl. D21-132.000.

Haack, Christian: *See—*
Weissman, Richard; Haack, Christian; and Fried, Michael, 258,308, Cl. D30-15.000.

Haddock, Nelson R. Compost bin and lid therefor. 258,258, 2-17-81, Cl. D7-194.000.

Hamilton, Gordon A.: *See—*
Boykin, Richard A.; and Hamilton, Gordon A., 258,269, Cl. D9-431.000.

Harris, John M. Flexible shoe horn. 258,249, 2-17-81, Cl. D2-378.200.

Hashimoto, Hidehisa; and Yoshizawa, Keiichi, to TDK Electronics Co., Ltd. Video tape cassette. 258,287, 2-17-81, Cl. D14-11.000.

Hashimoto, Minoru: *See—*
Ishida, Yoji; Hashimoto, Minoru; Nomura, Yoshiyuki; and Inoue, Yoshiaki, 258,286, Cl. D14-79.000.

Hayashi, Nobuaki, to Matsumoku Kogyo Kabushiki Kaisha. Electric guitar. 258,290, 2-17-81, Cl. D17-14.000.

Hayes, Robert R., to Oatey Company. Planing tool. 258,261, 2-17-81, Cl. D8-90.000.

Hess, Roy P.: *See—*
Greenlee, Hugh T.; Hess, Roy P.; and McKinnon, Donald C., 258,274, Cl. D10-112.000.

Hewitt, Donald W.; and Seibel, David D., to Data Card Corporation. Data card support and mailer member. 258,292, 2-17-81, Cl. D19-3.000.

ICL Scientific: *See—*
Parker, James E., 258,312, Cl. D16-57.000.

Iida, Kaoru: *See—*
Nakamura, Osamu; and Iida, Kaoru, 258,291, Cl. D18-12.000.

Inoue, Yoshiaki: *See—*
Ishida, Yoji; Hashimoto, Minoru; Nomura, Yoshiyuki; and Inoue, Yoshiaki, 258,286, Cl. D14-79.000.

Iolab Corporation: *See—*
LaHaye, Peter G., 258,310, Cl. D24-30.000.

Ishida, Yoji; Hashimoto, Minoru; Nomura, Yoshiyuki; and Inoue, Yoshiaki, to Matsushita Electric Industrial Co., Ltd. Combined television receiver and video tape recorder. 258,286, 2-17-81, Cl. D14-79.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; and Matsumoto, Susumu, 258,301, Cl. D21-63.000.
Nakao, Shinroku; Ishii, Yoshiyasu; and Yamamoto, Yoshio, 258,303, Cl. D21-74.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Nakamura, Osamu; and Iida, Kaoru, 258,291, Cl. D18-12.000.

Kendall Company, The: *See—*
Peterson, James J., 258,311, Cl. D24-54.000.

Ketcham & McDougall, Inc.: *See—*
Macowski, William, 258,293, Cl. D19-95.000.

Kingsley, Donald. Cultivating implement. 258,260, 2-17-81, Cl. D8-11.000.

Kitajima, Tsutomu, to Toshiba Photo Products Co., Ltd. Electronic flash unit. 258,289, 2-17-81, Cl. D16-42.000.

Klawitter, Ronald R., to Steven Manufacturing Company. Toy chain saw. 258,299, 2-17-81, Cl. D21-120.000.

Klucznik, Paul J., to General Electric Company. Tape recorder and player or similar article. 258,284, 2-17-81, Cl. 14-6.000.

Koseki, Ryosei, to Nissan Motor Company, Limited. Vehicular wireless microphone. 258,282, 2-17-81, Cl. D14-12.000.

Kowalski, Daniel J.: *See—*
Mareydt, Ray G.; Kowalski, Daniel J.; and Ferguson, Douglas J., 258,263, Cl. D8-382.000.

Kravchenko, Walter. Ankle bag. 258,246, 2-17-81, Cl. D2-383.000.

LaHaye, Peter G., to Iolab Corporation. Scalpel handle. 258,310, 2-17-81, Cl. D24-30.000.

Leighton, Joseph T. Gas fuel burner for fireplaces. 258,309, 2-17-81, Cl. D23-129.000.

Leon, Gordon T., to Berkey-Colortran, Inc. Spotlight. 258,314, 2-17-81, Cl. D26-63.000.

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Manville Forest Products Corporation: *See—*
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McKinnon, Donald C.: *See—*
Greenlee, Hugh T.; Hess, Roy P.; and McKinnon, Donald C., 258,274, Cl. D10-112.000.

Merzon, Albert. Closure strap for a carrying case. 258,250, 2-17-81, Cl. D3-54.000.

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Nakao, Shinroku; Ishii, Yoshiyasu; and Yamamoto, Yoshio, to Combi Co., Ltd. Wheeled toy animal figure. 258,303, 2-17-81, Cl. D21-74.000.

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Plessey Peripheral Systems: *See—*
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Collister, Kenneth D.; and Pugh, Jerry T., 258,273, Cl. D10-46.000.

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Rennels, Cyril L., 258,306, Cl. D23-97.000.

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Ryan, Stephen W. Novelty eyelid decoration. 258,275, 2-17-81, Cl. D11-2.000.
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Hewitt, Donald W.; and Seibel, David D., 258,292, Cl. D19-3.000.
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Stoddard, John P. Telephone subscriber's instrument. 258,283, 2-17-81, Cl. D14-53.000.
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Tillman, Elmer. Carrying pouch for a speed square or the like. 258,248, 2-17-81, Cl. D2-400.000.
Tomy Kogyo Co., Inc.: *See*—
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von Furstenberg, Catherine A. Pillow. 258,254, 2-17-81, Cl. D6-201.000.
Wagner, James L.: *See*—
Dickinson, Robert J.; and Wagner, James L., 258,305, Cl. D22-30.000.
Waterfield, Martin J., to Florists' Transworld Delivery Association. Bowl. 258,277, 2-17-81, Cl. D11-153.000.
Weissman, Richard; Haack, Christian; and Fried, Michael. Combined water tank and trough. 258,308, 2-17-81, Cl. D30-15.000.
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Wilson, William J., 4,652, Cl. 43.000.
Buck, Griffith J., to Iowa State University Research Foundation, Inc. Geranium plant named Super-Waltztime. 4,653, 2-17-81, Cl. 68.000.
Horton, Cecil V., to Horton, Cecil V.; and Horton, Dorothy. Almond tree. 4,651, 2-17-81, Cl. 30.000.
Horton, Dorothy: *See*—
Horton, Cecil V., 4,651, Cl. 30.000.
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Warriner, William A., 4,648, Cl. 11.000.
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ISSUED FEBRUARY 17, 1981

NOTE.—First number, class; second number, subclass; third number, patent number

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CLASS 4

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220 4,250,674
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475 4,250,690
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93.09 4,250,807
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93.15 4,250,808
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CLASS 104

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669 4,250,831
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198 F 4,250,850
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326 4,250,853
352 4,250,854
361 4,250,845
414 4,250,846
438 4,250,855
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419 PG 4,250,883
419 PT 4,250,884
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563 4,250,917
580 4,250,918
607 4,250,919
4,250,929
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625.41 4,250,921
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625.69 4,250,923
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CLASS 141

98 4,250,933
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CLASS 144

2 AA 4,250,935
312 4,250,937

CLASS 148

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250 Re.30,520
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380 4,251,311
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CLASS 162

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305 R 4,250,965
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142 4,250,970

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31.5 4,251,682
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33.6 4,250,977

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CLASS 193

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29 4,251,323

CLASS 202

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158 4,250,991
162 4,250,992
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273 4,250,994
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570 4,250,998
610 4,250,999

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CLASS 209

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45 4,251,352
129 4,251,353
240 4,251,354
241 4,251,355
250 4,251,356
437 4,251,357
4,251,358
547 4,251,000

CLASS 210

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150 4,251,370
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225 4,251,373
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254 4,251,003

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CLASS 221

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CLASS 235

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92 DM 4,251,722

CLASS 236

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49 4,251,026
4,251,027

CLASS 237

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12.1 4,251,029

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CLASS 239

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154 4,251,040

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CLASS 248

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CLASS 293

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CLASS 357

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244 4,251,835
264 4,251,836
280 4,251,837

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103 4,251,839
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122 4,251,841
134 4,251,842
137 4,251,843

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8 4,251,845
30 4,251,846
91 4,251,847
196 4,251,848
278 4,251,849
331 4,251,850
363 4,251,851
386 4,251,852
394 4,251,853

CLASS 362

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151 4,251,855
232 4,251,856

CLASS 363

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200 4,251,859
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4,251,866
408 4,251,867
427 4,251,868
484 4,251,869
500 4,251,870
518 4,251,871
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741 4,251,873
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900 4,251,874

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257 4,251,878

CLASS 369

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248 4,251,080

CLASS 370

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80 4,251,880
98 4,251,881

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29 4,251,883
49 4,251,884
60 4,251,885

CLASS 375

18 4,251,886

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613.1 4,251,162

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50 4,251,163
216 4,251,164

CLASS 403

263 4,251,165
402 4,251,166

CLASS 405

170 4,251,167
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CLASS 406

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300 4,251,193

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242 4,251,488

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315 4,251,498
329 4,251,499
449 4,251,500
465 4,251,501
478 4,251,502
4,251,503
632 4,251,504
659 4,251,505

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8 4,251,514
19 4,251,506
49 4,251,507
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89 4,251,509
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164 4,251,512
180 4,251,513
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185 4,251,521
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226 4,251,524
244 4,251,525
248.51 4,251,526
249 4,251,527
250 4,251,528
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4,251,530
251 4,251,531
4,251,532
256 4,251,533
258 4,251,534
263 4,251,535
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272 4,251,539
273 R 4,251,540
274 4,251,541
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99 4,251,582
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411 4,251,593
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59 4,251,612
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89 4,251,615
107 4,251,616
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332 4,251,622
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60 4,250,635
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219 4,251,217
327 4,250,633

CLASS 435

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28 4,251,629
98 4,251,630
106 4,251,631
180 4,251,632
288 4,251,633

CLASS 440

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306 4,250,798

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159 4,251,639

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335 4,251,653
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858 4,251,673

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	279	258,247		194	258,258	14—	6	258,284		53	258,283	D20—	42	258,297		129	258,309
	378.2	258,249	D8—	11	258,260	D10—	46	258,273			258,288	D21—	63	258,301	D24—	30	258,310
	383	258,246		90	258,261		58	258,272		79	258,286		74	258,303		54	258,311
	400	258,248		314	258,262		112	258,274	D16—	42	258,289		77	258,302		56	258,266
D3—	54	258,250		382	258,263	D11—	2	258,275		57	258,312		120	258,299	D25—	38	258,313
	71	258,251			258,264		61	258,276	D17—	14	258,290		132	258,298	D26—	28	258,315
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	154	258,253		426	258,268	D12—	70	258,279		34	258,296	D22—	6	258,304	D28—	64	258,318
	170	258,256		431	258,269	D13—	12	258,281		76	258,295		30	258,305		67	258,317
	201	258,254		433	258,271	D14—	11	258,287		95	258,293	D23—	97	258,306	D30—	15	258,308
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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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4,251,799
8 : 4,251,233
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DESIGN PATENTS

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06 : 4,648

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